FISHERIES ANNUAL REPORT

OF THE MINISTER FOR FISHERIES AND FORESTRY FOR 1983

FISHERIES

REPORT FOR

1983

AN ROINN IASCAIGH AGUS FORAOISEACHTA
(Department of Fisheries and Forestry)

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FOREWORD

This Report gives an account of the work of my Department in relation to fisheries during the year 1983. It also gives a statistical account of the fisheries in the State and a summary of the activities of the European Economic Community during 1983 as they affect the Irish fishing industry.

PADDY O'TOOLE
Minister for Fisheries and Forestry
27 February 1985

PART I

SEA FISHERIES

LANDINGS OF SEAFISH

In 1983 the total value of all sea-fish (excluding salmon) landings by Irish registered vessels amounted to IR£51.9m an increase of IR£4.9m or 10.4% on 1982 of which amount IR£45.4m relates to landings at Irish ports.

The total volume of sea-fish (excluding salmon) landings amounted to 198,000 tonnes of which 170,000 tonnes were landed at Irish ports.

The weights and values of annual landings of sea-fish (excluding salmon) at Irish ports by Irish registered vessels since 1974 are set out in the following table.

TABLE 1

Year	Tonnes	IR£'000
1983	170,233	45,432
1982	194,842	43,809
1981	176,577	35,444
1980	134,886	28,866
1979	85,697	24,905
1978	93,689	22,669
1977	82,488	18,689
1976	80,663	12,864
1975	76,262	9,135
1974	84,651	8,736

The leading ten fishing ports of 1983 in order of value of fish landed were Killybegs, Castletownbere, Rathmullen, Howth, Greencastle, Rossaveel, Dunmore East, Skerries, Burtonport and Kilmore Quay.

DEMERSAL FISHERY

In 1983 the total landings of demersal fish amounted to 36,011 tonnes. Landings of dogfish showed the largest percentage increase in volume of all demersal species increasing by 3,081

tonnes or 267%. Whiting was the species caught in the greatest quantity and was followed by cod, dogfish, haddock and saithe in that order. The total value of the demersal fish catch increased by 23% from IR£13.9m in 1982 to IR£17.1m in 1983. Cod was the first in terms of cash earnings followed by whiting, plaice, haddock and sole in that order. These five varieties contributed 61% of the total value of the demersal catch. The overall average price of all demersal fish in 1983 was IR£474 compared with IR£398 per tonne in 1982. The total quantity, value and average value per tonne of landings of demersal fish for each year since 1974 is shown in the following table.

TABLE 2

Year	Quantity Tonnes	Value IR£'000	Average Value per tonne IR£
1983	36,011	17,069	474
1982	34,916	13,908	398
1981	35,916	11,948	333
1980	27,231	8,398	308
1979	21,100	7,721	366
1978	17,900	5,862	327
1977	18,900	5,709	302
1976	23,800	4,652	195
1975	20,000	2,881	144
1974	19,500	2,527	129

PELAGIC FISHERY

The total pelagic catch for 1983 was 118,159 tonnes. The total value of the catch was IR£16.1m representing a decrease of IR£1.9m or 10.3% on the figure for 1982.

Herrings

Landings of herrings amounted to 32,025 tonnes valued at IR£5.2m. The average price was IR£163 compared with IR£176 in 1982.

Exports of fresh, chilled or frozen herrings in 1983 amounted to 18,299 tonnes valued at IR£6.6m as compared with 8,881 tonnes valued at IR£3.4m in 1982. The quantity exported in salted or smoked forms was 11,917 tonnes valued at IR£6.7m as compared with 9,067 tonnes valued at IR£5.0m in 1982. A further 554 tonnes valued at IR£764,000 was exported in prepared or preserved form. The total herring exports of 30,770 tonnes valued at IR£14m represented an increase of 60% in quantity and 51% in value.

The Federal Republic of Germany proved to be the biggest market for herring having purchased 8,202 tonnes valued at IR£5.6m. The Netherlands were next having purchased 6,028

tonnes valued at IR£2.3m followed by France, Northern Ireland and Great Britain.

The following table shows the total quantity, value and average value per tonne of herring landings for each year since 1974.

TABLE 3

Year	Quantity Tonnes	Value IR£'000	Average Value per tonne IR£
1983	32,025	5,229	163
1982	29,700	5,233	176
1981	29,600	5,046	170
1980	36,800	9,395	255
1979	27,400	7,863	287
1978	27,700	8,171	295
1977	23,100	6,033	261
1976	22,000	3,133	142
1975	28,800	3,232	112
1974	39,600	3,950	100

Sprats

Landings of sprats increased from 4,109 tonnes in 1982 to 5,511 tonnes in 1983 an increase of 34% while the value of the catch increased from IR£302,000 in 1982 to IR£489,000 in 1983 an increase of 62%.

The following table shows the total quantity, value and average value per tonne of sprats for each year since 1974.

TABLE 4

Year	Quantity Tonnes	Value IR£'000	Average Value per tonne IR£
1983	5,511	489	89
1982	4,109	302	74
1981	4,984	313	63
1980	9,350	705	75
1979	1,892	128	68
1978	9,119	342	38
1977	6,055	199	33
1976	8,576	218	25
1975	3,516	59	17
1974	7,314	139	19

Mackerel

Landings of mackerel amounted to 65,537 tonnes valued at

IR£8.5m as compared with 110,363 tonnes valued at IR£12.5m in 1982. The average price per tonne was IR£130 as compared with IR£113 in 1982. The chief landing places for mackerel were Killybegs and Rathmullen.

The following table shows the total quantity, value and average value per tonne of mackerel for each year since 1974.

TABLE 5

Year	Quantity Tonnes	Value IR£'000	Average Value per tonne IR£
1983	65,537	8,542	130
1982	110,363	12,456	113
1981	93,802	9,893	105
1980	50,791	4,226	83
1979	24,217	1,792	74
1978	27,507	1,720	63
1977	22,695	1,748	77
1976	14,394	877	61
1975	13,354	584	44
1974	8,525	365	43

SHELLFISH

The value of the shellfish catch at IR£12.2m showed an increase of IR£0.3m on the value of the 1982 catch. Landings of Dublin Bay Prawns increased from 5,147 tonnes in 1982 to 5,545 in 1983 with a consequent increase in value from IR£4.7m to IR£5.5m.

The value of shellfish landings over the past ten years is given in the following table.

TABLE 6

Year	IR£'000
1983	12,229
1982	11,909
1981	8,243
1980	6,143
1979	7,334
1978	6,526
1977	4,936
1976	3,886
1975	2,374
1974	1,754

EXPORTS

At IR£85m exports of fish and fish products including both sea and fresh water preparations (See Part II of this Report) established a new record. The comparative figure for 1982 was IR£73m. Details of exports are given in Appendix No. 4.

PERSONNEL AND VESSELS

In 1983 there were 3,020 vessels in operation as compared with 3,000 in 1982. The increase in numbers occurred mainly in the smaller vessel categories with a rise of 12 vessels in the 10 G.R.T. and under category. Increases of four and one vessels occurred in the 16-25 G.R.T. and 11-15 G.R.T. categories respectively. The 51-74 G.R.T. category showed an increase of two vessels while the over 100 G.R.T. category increased by one vessel.

The overall number of fishermen, including full and part-time, increased by 66 to a total of 8,572. The numbers engaged in full time fishing increased by 26.

AQUACULTURE

Fish farming in the sea has become a viable reality only in the past twenty or so years. Here in Ireland this infant industry has surged forward since the late 1970s, and species such as escallops and clams are being farmed, with the main emphasis on oyster and mussel cultivation.

The State has encouraged the development of aquaculture through the setting up of a grants scheme in 1980 which is operated by an Bord Iascaigh Mhara. In 1983, B.I.M. grants for this purpose totalled approximately IR£87,298. Further encouragement was given through the provision of technical, engineering and scientific advice and assistance which was available throughout 1983 to various private operators of shellfish and salmonid rearing stations.

Section 54 of the Fisheries Act, 1980, which provides for a complete new system of licensing fish farming activities in the sea, was implemented by the Minister in August, 1983 and plans were put into effect to commence the process of designating areas within which it would be lawful to engage in aquaculture in accordance with licences to be granted by the Minister.

Aquaculture continued to expand in 1983 and this has contributed further to the National Economy.

AN BORD IASCAIGH MHARA

The Board received a grant from the Fisheries Vote for the year ended 31 December 1983 of IR£7.02m for administration and current and capital development. Repayable advances totalling IR£3 million were also made to the Board from the Central Fund, mainly for the provision of boats and gear.

The scheme of loans, grants and leasing arrangements for the acquisition of sea fishing boats and gear continued in 1983. During the year, twenty five new vessels joined the fleet to the value of IR£4,280,550 all of which were built in Irish yards. Five of these vessels ranged in size from 54ft to 75ft while the balance were all under 50 ft overall length. Sixteen new vessels which had been approved for B.I.M. finance were on order with Irish builders at the end of 1983.

The continuing difficulties being experienced by a majority of borrowers in servicing their loans is making it increasingly difficult to approve applicants for new vessels. There were arrears totalling approximately IR£6.0 million at 31 December 1983. Loan repayments during the year reached only 51% of commitment and this was a reduction of 7% on the equivalent rates in 1982.

As from December 1, 1983 the Board has had two divisions engaged in marketing, one concentrating on the export market and the other on the home market. This change is bringing extra manpower to the marketing area and will result in a greater and more effective effort being placed by the Board on market development in future years. Another significant development during the year was the formation of a Market Advisory Group to review and assist the overall marketing situation for Irish fish.

A total of 58 young persons received induction training at the National Fishery Training Centre and were given berths on board sea fishing boats in 1983. A roof mounted 'dry' trawler deck which allows trainees to gain experience and appreciation of fishing gear and deck machinery operation under safe and controlled conditions was completed at the training centre. Courses on board the Board's mobile training unit which dealt with electronic fish detection, radio communication and navigation equipment continued during 1983.

The Board's involvement with DEVCO continued with the running of a seven week fisheries development management course, which was attended by senior Governmental fisheries personnel from Egypt, Tanzania, Sierra Leone, and Papua New Guinea. A shorter programme was held for a group of Indonesian fisheries executives at the request of F.A.O.

The Board's Annual Report on its activities in 1983 is published separately.

SEA FISHERIES PROTECTION

Regular inspection patrols of the 200 mile fishery zone were carried out by the Naval Service in conjunction with the Air Corps to ensure compliance with E.E.C. and national measures for the protection and control of sea fisheries. As a result of these patrols, prosecutions under the Fisheries Acts were

instituted against 51 skippers whose vessels were arrested for various infringements including illegal entry of the fisheries limits, illegal fishing and attempted illegal fishing. Of these, forty two skippers were convicted and fined a total of IR£1,024,085, three were released due to lack of sufficient evidence and six cases were still sub-judice at the end of the year.

The Minister for Fisheries and Forestry gratefully acknowledges the co-operation of the Naval Service, the Air Corps and the Garda Siochana in the enforcement of fishery protection measures.

The Fisheries (Amendment) Act, 1983 which came into effect on 19th July, 1983, provides inter alia for restrictions on the registration of foreign fishing vessels in this country for the purpose of gaining access to Irish and E.E.C. waters. It also provides for control measures on the operations of vessels registered in other E.E.C. States under flags of convenience e.g. the implementation of requirements regarding the nationality of crew members which have been put into effect by the Sea-fishing Boats Regulations, 1983.

The implementation of this legislation has effectively prohibited such vessels being registered here and has greatly restricted the fishing activities of vessels operating under flags of convenience.

EUROPEAN ECONOMIC COMMUNITY

Common Fisheries Policy

Negotiations which had been going on for over six years were concluded in Brussels on 25 January 1983 when agreement was finally reached on a number of measures making up a new common fisheries policy. These measures deal comprehensively with all aspects of fisheries and will form the basis for future organisation of the fisheries sector in the European Community as a whole. Details of the new policy are as follows:

Limits

Under the new arrangements which will run for a period of 20 years, subject to review after an initial ten year period, the following improvements have been achieved over the existing situation regarding fishing in Ireland's 6-12 mile belt.

France has withdrawn completely from the area between Erris Head, Co. Mayo and Malinmore Head, Co. Donegal, and between Sybil Point, Co. Kerry and Mizen Head, Co. Cork.

The United Kingdom has completely withdrawn from the whole west and south west coast between Lough Foyle, Co. Donegal and Mine Head, Co. Waterford.

Belgium has withdrawn completely from the area between Achill, Co. Mayo and Cork Harbour and between Carnsore Point, Co. Wexford and Wicklow Head and has been restricted to fishing for demersal species only in the small areas still open to it.

Germany and The Netherlands have completely withdrawn from the east coast and will fish only for mackerel and herring along parts of the south coast.

Italy, Denmark and Greece no longer have fishing rights anywhere inside 12 miles from Irish baselines.

Irish vessels retain their existing rights to fish in the British 6-12 mile limit in the most productive parts of the Irish Sea and off the west of Scotland as well as around the Isle of Man and off Northern Ireland.

Quotas

The quota levels agreed (retrospectively) for Ireland for 1983 compared very favourably with the targets established under the Hague Agreement of 1976 having regard to conservation requirements. The only shortfall is in relation to herring and this arises because of the need to severely restrict fishing on some of our key herring stocks such as the Celtic Sea in order to safeguard the future of these stocks. On the other hand our allocation of some species such as mackerel is well above our entitlement on the basis of our catch in the base year 1975. Overall, however, the Commission's quota proposal meets our Hague targets.

Conservation

There will be strict conservation of fish stocks on a Community wide footing based on scientific advice on such matters as mesh sizes, minimum landing sizes, closed areas and seasons etc.

Control

A strict system of control on catch levels through keeping of log books and submission of catch reports is envisaged throughout the whole community. The EEC Commission will now be in a position to monitor the extent to which Community Regulations are being adhered to in member States. An independent EEC surveillance force has been established with the objectives of supervising the enforcement of the quota and conservation regulations by member States.

Aid for re-structuring

Grants from F.E.O.G.A. are available for a three year period to assist re-structuring and modernisation of the Community

fishing fleet and for the development of mariculture. This scheme replaces earlier schemes which operated for only one year at a time and had to be re-negotiated each time.

Over three years the Community intends to spend 250 million ECU on:

(a) Reduction of capacity: the Community will subsidize capacity cuts through grants for scrapping of vessels and temporary laying up of larger vessels.

(b) Exploratory fishing and joint ventures: the Community will subsidize voyages to discover new fishing grounds and under-exploited resources. The aid proposed for joint ventures is limited to Mediterranean countries.

(c) Restructuring, modernizing and developing the fishing industry and for developing aquaculture: The aid is intended for bringing modernized or new vessels into service to replace old vessels with priority for coastal areas where fishing is traditionally an important economic activity. Aid will also be granted towards projects to build, equip and modernize aquaculture installations, with priority given to experimental projects.

Marketing

A new marketing regime was introduced with effect from 1 January 1983 the main benefits of which are as follows:

(a) the strengthening of the role of existing fish producers' organisations and increased aid measures for new producers' organisations;

(b) a broader criterion for establishing withdrawal prices and the introduction of some flexibility in their operations to take account of market fluctuations;

(c) increased financial compensation levels payable by the Commission for fish withdrawn from the market which fail to find a buyer at or above the withdrawal price;

(d) a better protection system against market disruption caused by low cost imports from non-EEC countries;

(e) financial aid for the storage of withdrawn fish in an attempt to retain such fish for the human consumption market.

Third Country Fishing

Only countries which conclude agreements with the Community may fish in future within the Irish 200 mile zone. Access to particular fish stocks will be allowed only on the basis of quantities surplus to Community and Irish needs and third country vessels will not in any event be allowed trawl

inside a Box which is nowhere nearer to the Irish Coast than 50 miles. Third country vessels will be subject to the generally applicable conservation regulations and also to especially strict requirements on reporting and record keeping.

Other Councils

Council meetings were also held on 20th/21st June, 11th July, 15th July, 3rd/4th, 19/20th October and 14th December 1983.

The following Regulations were adopted:

- A regulation provisionally applying the Agreement between the EEC and Equatorial Guinea
- A regulation on the conclusion of the Agreement between the EEC and the Government of Denmark and the Faroes establishing measures for salmon fishing in the North Atlantic.
- Decisions were also taken on Norway, technical measures for conservation of fishery resources and structural measures.

From an Irish viewpoint the outcome was satisfactory in that

(1) an attempt to allow Norway to fish for blue whiting within 50 miles of the Irish Coast was defeated;

(2) a mackerel box off the South-East coast wherein there is a ban on mackerel fishing was adopted as part of the conservation measures; and

(3) structural measures were agreed and in the restructuring sector relating to the building and modernisation of fishing vessels a reduction from 12m to 9m was agreed, thus applying this aspect to a larger part of the Irish fishing fleet.

At the final Council meeting of 1983 agreement was reached on the North Sea herring problem, TACs and quotas for 1983, the Fisheries Agreement with Canada and the Regulations implementing the results of the consultations with Norway on fishing activities in 1984. The Council also agreed on a roll-over decision governing TACs and quotas for 1984 until its next meeting on 31.1.'84.

European Agricultural Guidance and Guarantee Fund (FEOGA)

Guarantee Section

The prices for the 1983 marketing year came into effect on 1 January 1983. The following table shows approximate price increases for the quality grades of most interest to Irish fishermen.

Species covered by community price support arrangements	Percentage increases
Cod	9.5
Saithe	8
Haddock	5
Herring	0
Mackerel	7
Plaice	4
Hake	12
Whiting	6

EEC subvention for withdrawals in 1983 amounted to IR£1.395m in respect of fish which failed to meet the minimum intervention price.

Export Refunds

Export refunds were available until 31 October 1983 for exports to specific third country destinations of a range of fishery products – frozen whole mackerel, frozen mackerel fillets, dried and salted coalfish and mackerel dried, salted or in brine.

At the Fishery Products Management Committee meeting of 26 October 1983 the Commission put forward a proposal to reduce the rate of refund to a "nil" rate with effect from 1 November 1983. The Minister travelled to Brussels and spoke with the President of the Commission Mr. Thorn, pointing out the serious consequences on Ireland's fishing industry. Arising from that visit, two Commission officials came to Dublin for an examination of our mackerel markets and met with Departmental officials, B.I.M. and representatives of the I.F.P.E.A. Unfortunately, the Commission concluded that Ireland's problems were in the broader area of the cost of finance and thus not peculiar to fisheries. Thus they could not recommend a fisheries measure, such as the export refund as a solution to the problem. The level of the refund remains at zero. Ireland will keep matters under review and press for the reintroduction of export refunds according as the market situation warrants.

Refunds were claimed by Irish exporters principally for frozen mackerel products exported to Nigerian markets. The following refund rates per tonne applied during the year:

Frozen whole mackerel ECUs per tonne	Mackerel Fillets ECUs per tonne	
42.8	31	1.1.83 to 14. 2.83
38.5	28	15.2.83 to 14. 5.83
34.6	25.2	15.5.83 to 31.10.83

The following exchange rates applied during the year

1.1.83 to 22. 5.83	One ECU = .691011	IR£'s
23.5.83 to 19. 6.83	One ECU = .716950	IR£'s
20.6.83 to 31.12.83	One ECU = .725690	IR£'s

Total export refund payments to Irish exporters of mackerel during the year came to IR£1.164m.

Guidance Section

On 26 July 1983 the Commission decided to grant aid, from this section, projects involving the construction and modernisation of inshore fishing vessels and the construction of aquaculture establishments as part of an interim common measure for restructuring the Community inshore fishing industry. The grants awarded to Ireland amounted to IR£4.044m which represents approximately 17% of the total FEOGA aid allocated for division between the Member States. In project terms, the aid related to the construction of 69 new fishing vessels, modernisation of 4 existing vessels and 5 aquaculture projects.

RESEARCH AND DEVELOPMENT

Pelagic Fisheries

Investigations were continued throughout the year on the stocks of herring and mackerel in Irish waters. These investigations, based on sampling of catches and surveys of larval and juvenile fish, using chartered commercial fishing boats, form the basis of the assessments of the various stocks. These assessments are then used to provide advice for the management of these fisheries.

Herring

The recovery of the stock of herring in the Celtic Sea and off the southwest of Ireland commenced in 1981/82 when a very strong recruitment of young herring, which had been spawned in 1979, took place. This recovery was maintained during 1983 with an even stronger recruitment of herring which had been spawned in 1980. At the same time the contribution which these good year classes have made to the spawning population has been reflected by a very big increase in the larval production shown by the surveys in the autumn and winter of 1983. The recovery has taken place despite the catches in 1983 which were considerably in excess of the scientifically advised

level. The spawning stock at October 1983 was estimated to be about 60,000 tonnes and it was considered that this should yield a catch not exceeding 13,000 tonnes.

The stocks of herrings off the west and northwest coasts (i.e. ICES divisions VIa and VIIb) were also monitored and assessed by sampling and larval surveys. In 1983, catches increased considerably. The larval surveys, undertaken by a chartered Irish fishing vessel, indicated an increase in larval production in 1983 compared with that of 1982, but a combination of the results obtained from both Irish and Scottish surveys showed a slight overall decrease in spawning stock sizes. However the size of the stock in this area appears to have been reasonably stable during recent years and the recommended catches have been about 10-12,000 tonnes. Recruitment of young fish has also been constant and no outstanding year classes have entered the fishery since 1977 and 1978. In recent years there appears to have been an increase in the proportion of herring in this area which spawn in winter and early spring compared with the main race of herring which usually spawns in November. It is not yet known whether this is a result of a change in spawning time or reversion of the fishery to one which is mainly based on winter spawning herring as it was in the years prior to 1940.

The small Irish Sea (Div. VIIa) stock, exploited as and consisting of the Manx and Mourne fisheries, was assessed again in 1983. The stock has continued to increase – mainly because of considerable reductions in catches from 1981 to 1983.

Mackerel

Research on the mackerel fishery continued in 1983 and was based solely on a sampling programme. The results of this, together with those obtained from an international egg survey conducted in 1983 by most other countries participating in the fishery, indicate that the decline in the mackerel stock has continued. This decline is due to a continuation of the very high catches and the very low level of recruitment. The total stock is now estimated to be at about half the level it was ten years ago and with the continuing poor recruitment it will fall even further. The numbers of old fish now present in the catches has also fallen in recent years and the catches in 1983 relied on young mackerel to a much greater extent than in previous years.

Sprat

Samples of sprat were examined throughout the year from landings made at various ports. The samples were not examined as part of a routine assessment programme but mainly to provide information for exporters on quality – e.g. weight and length, presence or absence of food in the stomach and fat content. The sprat fisheries are continuing to grow in importance

as they provide a viable alternative to boats formerly engaged in herring fishing.

Fat content

The Fisheries Research Centre continued to supply information throughout the year on fat content of herring, mackerel and sprats to exporters and others in the trade.

DEMERSAL FISHERIES

In the north-west, landings of the most commercially important species (cod, haddock, whiting) continued to be monitored at Killybegs and Greencastle. The spawning stock biomass of north-west cod (i.e. the size of the stock of mature cod, not including the juveniles) has increased appreciably in recent years as a result of the recruitment of good year classes. This has also been seen in the haddock stock but to a lesser extent. The total international catch from both these stocks has increased as a result of the greater stock sizes, but paradoxically the yield could be even greater if the stocks were fished less intensively. By reducing fishing effort the average size of the fish in the catch would be bigger and heavier, because more of the younger ones would survive to be caught at an age when they had put on more weight. The catch per unit of fishing effort would thus rise.

The spawning stock of whiting in the north-west is not in as good a state as those of cod and haddock. Recruitment has been below average and the level of exploitation has been too high.

In the Irish Sea, the research programme continued to include the analysis of the stomach contents of cod. This confirmed that *Nephrops* (the so-called Dublin Bay Prawn) is the principal food item in the diet of Irish Sea cod. This interaction between the two species has obvious implications for the management of the respective fisheries exploiting them.

The spawning stock biomass of Irish Sea cod is still at a high level, having been built up by the very good year classes of 1978 and 1979. As in the north-west cod stock, this good recruitment has supported increased catches in recent years. The Irish Sea whiting stock, on the other hand, appears to be declining at present. Recent whiting recruitment levels have been low.

The spawning stock biomass of plaice, the only other demersal species included in the Irish Sea research programme, increased steadily from a low level of around 3,500 tonnes in 1977 to almost 6,500 tonnes in 1982. The figure calculated for 1983 is somewhat lower, just over 5,000. The twice yearly surveys of the abundance of young plaice in the Irish Sea continued during the year.

SHELLFISH

Nephrops

Catches in the Irish Sea, at 4,236 tonnes were very slightly down on the 1982 figures of 4,373 tonnes but still above the prevailing level of recent years. Rossaveel landings incorporating the Porcupine Bank fishery, showed an increase for the second year running (74, 513 and 799 tonnes in 1981, 1982 and 1983 respectively), while those in the south-west, which also have a Porcupine Bank component, also increased. Whilst the Porcupine Bank fishery is currently expanding, as is that of the Smalls Grounds to the south of Wexford, by far the greatest part of the catch (77% in 1983) still comes from the traditional Irish Sea ports of Skerries, Clogherhead, Howth and Balbriggan. The Irish Sea fishery, however, is now very much below its potential in profitability because of the small average size of *Nephrops* in the landings.

During 1983, the three-part samples of catch, landings and discards continued to be taken at Irish Sea ports during the main season (April–September), being classified in the laboratory as to length, sex and sexual condition in the females. In addition, during the summer, the *Nephrops* fishery initiated in recent years on the Porcupine Bank was sampled. This was noted for the low percentage of females (3.1%) which is in strong contrast to the Irish Sea at the same season. The reason for this is unknown.

Experimental fishing for *Nephrops* was undertaken in the Irish Sea, using a trawl with two cod-ends, one above the other. The objective was to separate the *Nephrops* from the by-catch of whiting, and for some of the hauls a series of longitudinal cords were inserted running forward from between the two cod-ends at the point of division to a point on the lower half of the trawl about 2 metres forward. The purpose of these cords was to deflect whiting upwards into the top cod-end, while leaving the cod-end distribution of *Nephrops* undisturbed. The experiments gave encouraging results and are being continued.

MARINE POLLUTION AND ENVIRONMENTAL QUALITY

Four designated shellfish growing areas were monitored under EEC Shellfish directive 79/923: Clarinbridge and Kilkieran Bay (Co. Galway), Killary Harbour (Galway/Mayo) and Mulroy Bay (Co. Donegal). The oyster fisheries in Tralee Bay and Clew Bay were also sampled.

The national input to the 1983 Joint Monitoring Programme of the Oslo and Paris Commissions was carried out at five JMG stations by the Department's scientists. These included the Boyne estuary, Dublin Bay, Waterford Harbour, Cork Harbour and the Shannon estuary. Shellfish were sampled from these

areas and the levels of mercury and cadmium were reported to the two Commissions.

A major survey of the Dublin Bay sewage sludge dumping ground was undertaken which incorporated detailed chemical and physical investigations of fish, water and sediments. A preliminary investigation of the water chemistry in the industrial waste dumping ground off the south coast of Co. Cork was carried out.

The effects of aquaculture activities on water quality in both inland and coastal locations were determined. Chemical investigations were undertaken in a number of fish mortality and pollution cases. A joint programme, carried out in co-operation with the Forest and Wildlife Service to determine the effects of forestry practice on nutrient levels in freshwater systems (R. Barrow and the Owengarve lake system), was completed.

The Department's Fisheries Research Centre participated in the 7th ICES Intercalibration Exercise for trace metals in biota and the 5th ICES Intercalibration Exercise for trace metals in seawater.

Scientific advice continued to be provided to Local Authorities and the Department of the Environment on effluent discharge licence applications under the Local Government (Water Pollution) Act, 1977. Scientific advice also continued to be provided to the Department of Transport on licences issued under the Dumping at Sea Act, 1981, in respect of sludge, industrial wastes and dredge spoil, and on licences issued under the Foreshore Act.

Analyses, including histamine and metals, were carried out on processed fish and shellfish for export certification purposes.

AQUACULTURE

Scallop research continued in Mulroy Bay, Co. Donegal, where investigations were carried out on phytoplankton (microscopic aquatic plant life), hydrography and on the settlement of the young stages of the scallop. Very few scallop settled out in 1983, and in commercial terms the settlement was a failure. This may have been associated with the unusual weather pattern in 1983, when a cool cloudy spring was followed by a high concentration of sunshine-hours, at a time which was at variance with the 30-year climatological pattern for the area. In turn, this created relatively high water temperatures which favoured the development of a small algal bloom.

The 1983 Mulroy Bay programme also included a preliminary assessment of scallop growth beneath, and at varying distances from, salmonid fish cages. This work is continuing.

Work was also carried out in Valentia Harbour and Portmagee

Channel, Co. Kerry, where the suitability of ongrowing sites was assessed using Mulroy Bay scallop of the 1981 year-class which were transplanted to suspended culture at the Kerry sites in early summer 1983. Growth was best within the estuary of the Cahir River and in the Portmagee Channel, but fouling of the scallop shells by barnacles and tubeworms was so severe that these locations cannot be recommended for ongrowing by this method. The area's aquaculture potential, however, could best be realised by sowing, on the seabed, larger scallops than those used in this suspended culture experiment. Studies were also conducted on the abundance and size of different predators, chiefly the green crab (*Carcinus maenas*), which is not only frequent in the locality but also grows to a large size. Scallops for relaying would need to be over 5 cm (2 inches) in size in order not to be eaten by crabs.

Technical advice continued to be provided on the cultivation of oysters and mussels at various locations, particularly raft and long-line culture of mussels in Bantry Bay.

STUDENT BURSARIES

The long standing programme of employing 3rd-level students for periods of eight weeks each during the summer continued in 1983. Sixteen undergraduates from Irish universities and Regional Colleges of Technology participated in nine marine research programmes: one each on Irish Sea *Nephrops*, aquaculture in Mulroy Bay, Co. Donegal, mussel culture in Bantry, Co. Cork, crawfish (Cleggan, Co. Galway) and computer program development at the Fisheries Research Centre; two bursars worked on red tide monitoring (FRC), three each on Irish Sea demersal fisheries, general chemistry/environment research and the sea-bed fauna of Dublin Bay. The three students on the latter project were funded by Dublin Corporation through the Department of Transport.

FOREIGN RESEARCH VESSEL CRUISES

Scientific staff of the Fisheries Research Centre worked on board the USSR research vessel *Persey-3* which surveyed blue whiting stocks west of Ireland; the English research vessel *G.A. Reay* which carried out an extensive survey of the abundance of mackerel eggs and larvae on the continental shelf; and on the Norwegian purse seiner, *Fiskeskjar* with Norwegian scientists tagging mackerel off the south-west and south coasts of Ireland.

FISH PATHOLOGY UNIT

The unit continued its diagnostic and advisory service to fish farmers and also carried out research into causes and control of diseases in farmed and wild fish stocks. Considerable time was also devoted to statutory functions of control of disease introduction and spread within the country.

Importation of live fish

Salmon and trout ova from a number of countries such as Denmark, Norway and Scotland were imported under licence for fish farming purposes. Live salmon smolts from Norway were again imported into the country from Norway. The fish, totalling 60,000, were transported by boat from Bergen direct to Donegal. The regulations governing this importation, which was supervised by the staff of the Unit, were strict and the fish were monitored subsequent to their importation to ensure they were disease free.

Licences were issued for the importation of 260,890 goldfish for the pet trade and samples of these fish were screened for disease.

Diseases of farmed fish

Monitoring of the disease situation at farms and hatcheries was continued by inspections and examination of fish. The following is a resume of the main problems encountered:

Parasitic diseases

Serious losses in salmon occurred at a number of cage farms during the summer due to the protozoan parasites *Trichodina* and *Costia*. The parasites infect the gills and cause serious damage. Experiments were carried out to establish an appropriate treatment for this problem and it was found that the use of Formalin at a concentration of 1 in 4,000 was effective in eliminating the problem. However repeat treatments are usually necessary. Losses due to sea lice infestation of fish were also observed.

Viral Diseases

Two outbreaks of Infectious Pancreatic Necrosis occurred in 1983 in rainbow trout. This disease causes significant losses in young fish during their first year of life and there is no effective cure for the disease.

Bacterial diseases

Vibriosis was the cause of losses in salmon smolts at two marine farms. Antibiotic treatment was disappointing. However these cases were complicated by the presence of gill parasites and sometimes myxobacterial skin infections. No cases of furunculosis occurred in 1983.

Diseases of shellfish

Following reports of Bonamia disease in oysters exported from this country to Spain a major survey of the important shellfish growing areas around the coast was undertaken to establish the health status of our oyster stocks. Tests carried out on several hundred oysters showed no evidence of disease. It is thought that the oysters exported to Spain contracted the disease after their arrival there.

Diseases of wild fish

The work on disease prevalence in marine flatfish on the east coast was continued. A five day cruise was carried out in April 1983. A total of 5,121 plaice were examined and the disease prevalence was 0.84%. 1,567 dabs were examined and the disease prevalence was 0.89%. 98 flounder were examined and the disease prevalence was 2.04%. In plaice the highest disease prevalence recorded was due to fin rot. In dab, ulcers of the skin accounted for the highest disease prevalence and flounders showed an equal prevalence of lymphocystis (a viral disease), ulcers and fin rot. The disease levels were considered low.

Vibriosis disease of eels

A major epizootic of this disease occurred in eels in Wexford Harbour in September. Many thousands of eels died after storage in floating boxes there. This is the first record of this disease in Ireland. Further studies into the causal bacterium is in progress. The epizootic was associated with high water temperatures and high salinities in the estuary at the time.

Ulcerative Dermal necrosis (UDN)

Reports of this disease were received from the Regional Fisheries Boards. Small numbers of fish were reported from the Liffey and Dargle. The greatest number of diseased fish in the eastern region was reported from the Wexford district. There were very few diseased fish reported from the south western region the worst affected rivers being the Cumeragh and Bandon. In the Shannon region in excess of a hundred diseased fish were observed in February in the river Feale. No reports of diseased fish were received from the western region but in the north western region large numbers of diseased fish were reported from the Bunree river. There were few reports of disease from the northern region except for marked fish as a result of spawning.

Research

The following areas are being researched at present.

Infectious Pancreatic Necrosis (IPN)

As stated in last year's report a major survey was begun to establish the prevalence of this virus disease on fish farms in the country. Although only 2 outbreaks of the disease occurred, the virus was isolated from six rainbow trout farms and two marine farms. Serotyping of one of the isolates from rainbow trout shows it to be most like the sp strain which is the most virulent of the 3 main strains.

Bacterial diseases

Research is being undertaken into the pathology of a number of bacterial diseases.

ENGINEERING

FISHERY HARBOUR WORKS

Designated Fishery Harbour Centres

At Killybegs Fishery Harbour Centre expenditure on development works during the year was IR£209,270.

At Castletownbere Fishery Harbour Centre expenditure on development work during the year was IR£156,050 which included the cost of completing the construction of an effluent disposal plant to serve Dinish Island.

At Howth Harbour IR£1,503,548 was spent during 1983 on development work. This included expenditure in the provision and installation of a syncrolift, transverser and boat repair bays.

Other Harbours, Ports and Landing Places

Fishery Harbour improvement works, grant aided by the Department of Fisheries and Forestry, were completed during the year at Oilean na gCaorach, Co. Cork, Cahirciveen, Co. Kerry, Liscannor and Seafield, Co. Clare. An underwater survey was carried out at Schull, Co. Cork and a hydraulic survey was undertaken at Clogherhead, Co. Louth. Fishery harbour works in non-Gaeltacht areas were in progress at the end of the year at Portevlin, Co. Donegal, Killala, Kilcummin and Rathlacken, Co. Mayo and Seafield, Co. Clare.

Improvement works which were recommended by the Department of Fisheries and Forestry and financed by Roinn na Gaeltachta were completed during the year at Doonalt, Co. Donegal and Doohoma, Co. Mayo while works were in progress at the end of the year at Magheraroarty, Ballyness and Leac Dubh, Co. Donegal and Kilronan, Co. Galway.

TECHNOLOGY

Fish Quality Control

During the year, landings were supervised by Fish Quality Officers to ensure compliance with the Demersal (Handling, Storage and Transport) Regulations, 1979, the Pelagic (Handling, Storage and Transport) Regulations, 1979, the Shellfish (Handling, Storage and Transport) Regulations, 1979 and with the EEC common marketing standards for fresh or chilled fish. These standards, which relate to size and freshness categorisation, are laid down by EEC Council Regulations Nos. 103/76 and 3166/82. All fish offered for sale for human consumption within the Community must comply with the provisions of these Regulations.

INTERNATIONAL AND OTHER CONFERENCES

During 1983 the Department participated in the following conferences, committees, working groups etc:

Abroad

Statutory Meeting of the International Council for the Exploration of the Sea (ICES) (Gothenburg) and the following ICES working groups and advisory committees:

Marine Chemistry Working Group (Copenhagen)
Working Group on Marine Sediments in relation to Pollution (Norwich)
Working Group on Marine Pollution Baseline and Monitoring Studies in the North Atlantic (Copenhagen)
Working Group on Pathology and Diseases of Marine Organisms (Lisbon)
Roundfish Working Group (Copenhagen)
Herring Assessment Working Group for the Area South of 62° N (Copenhagen)
Irish Sea and Bristol Channel Working Group (Copenhagen)
Mackerel Working Group (Copenhagen)
Advisory Committee on Fisheries Management (Copenhagen)
Advisory Committee on Marine Pollution (Copenhagen)
European Commission Scientific and Technical Committee on Fisheries (Paris)
Oslo and Paris Commissions Standing Scientific Committees (various centres)
International Baltic Sea Fishery Commission (Warsaw) (advisory capacity, funded by ICES)
North East Atlantic Fisheries Commission (London) (advisory capacity, funded by ICES)
Scientific and Technical Committee on Fisheries (EEC)

Home

National Board for Science and Technology
– Mariculture Committee
– Shellfish Advisory Group
Resources and Environment 1983 – an analysis of policy issues (University College, Dublin)
Basics of effluent treatment (Institute for Industrial Research and Standards, Dublin)
Local Authority Experience in Implementation of Water and Waste Legislation (An Foras Forbartha, Dublin)
International Shellfish Conference (Dublin)
Technical Committee on Effluent and Water Quality Standards.

Legislation

Particulars of the Statutory Instruments relating to Sea Fisheries made during the year are included in Appendix No. 20.

PART II

INLAND FISHERIES

CATCHES OF SALMON, SEA TROUT AND EELS

Details of the catches of salmon, sea trout and eels in the various Fisheries Regions during 1983 are given in Appendices Nos 10 to 16 of this Report. As usual, the catches in the Foyle Fisheries Commission area, formerly the Moville Fishery District, are not included but they are referred to in a separate section of the Report.

In 1983 the catch of salmon and grilse amounted to 490,764 fish weighing 1,515 tonnes and valued at IR£6.7m compared with 288,587 fish weighing 908 tonnes and valued at IR£4.0m for 1982. The overall average weight at 3.09 kg was slightly lower than in 1982. The commercial catch at 1,465 tonnes was higher than the 1982 figure of 867 tonnes. The total rod catch amounted to 14,232 fish weighing 49.55 tonnes, and valued at IR£218,504 compared with 1982 when 12,370 fish weighing 40.44 tonnes and valued at IR£178,340 were caught. The total number of licences of all kinds issued for angling for salmon and sea trout was 16,071 compared with 15,794 in 1982. The salmon catch figures for nets and rods for the years 1981, 1982 and 1983 are given in Appendix No. 11.

In 1983 the salmon and grilse catch (by weight) was distributed as follows:

Drift nets	83%
Draft nets	11%
Stake nets, snap nets, weirs and other commercial methods	3%
Rod and line	3%

The average weight and value of salmon caught by commercial fishing engines during the past three years are given in Appendix No. 10. Details of the catch of sea trout in 1983 in the various Fisheries Regions are given in Appendix No. 12. Very little commercial fishing specifically for sea trout is done in this country and over 50% of the total catch is taken as a by-catch of commercial fishing for salmon. It is difficult therefore to compile accurate statistics.

FISHERIES PROTECTION AND CONSERVATION

Protection

The level of illegal fishing continues to give cause for concern. The many statutory conservation measures viz. licensing, close seasons, weekend close time, type, length and depth of fishing nets and methods of fishing etc. are intended to ensure adequate stocks for the future. The fishery laws are enforced by the Fisheries Boards.

In addition to the work of the Boards, the Department of Defence supplied two minesweepers in 1983 during the salmon fishing season to enforce the salmon fishery laws at sea. Aerial patrols are also provided by the Department of Defence.

Conservation

During 1983 the Department continued its on-going review and monitoring of the various fishery conservation measures throughout the country.

Numerous submissions from the various organisations and people involved in inland fishing were received and these were carefully examined in the Department and taken into account prior to the taking of decisions concerning new statutory measures.

A list of all statutory instruments made in 1983 is given in appendix No. 20.

Arterial Drainage

Drainage Schemes are currently in progress in the catchments of the Boyne, Maigue, Corrib/Mask/Robe/Bonet and Boyle/Lung. Drainage Schemes are being considered for the Monaghan Blackwater catchment, on which works have commenced in Northern Ireland and also on the Dunkellin–Kilcolgan catchment in Co. Galway.

In accordance with the Arterial Drainage Act, 1945, close liaison was maintained between the Department and the Office of Public Works in relation to rehabilitation works with a view to reducing the adverse effects of drainage on fisheries and to ensure that the drainage works are executed in such a way as to cause the least possible damage to fish life. A programme of rehabilitation works is underway on the Stoneyford – a tributary of the Boyne. These works are being carried out by the Eastern Regional Fisheries Board and financed by the Office of Public Works. The Fisheries Boards work closely with the Department in the drawing up and implementation of post drainage rehabilitation works on all rivers. The Boards also maintain close contact at local level with Office of Public Works officials on the timing and extent of post drainage maintenance works.

Water Abstraction Schemes

In 1983 the Department was consulted about water abstraction schemes on the following rivers and lakes – Rivers Fane, Dee, Lee, Bilboa, Loughs Muckno, Inchiquin, Owel, Cutra, Owenboliska, Anaserd, Nahillion, Rea, Ballinakill, Gill, Keneal and Derrynasallagh. As mentioned in the engineering section of this report, the Department tries to ensure by various methods that the adverse effects of such schemes on fish life are kept to the minimum.

THE CENTRAL AND REGIONAL FISHERIES BOARDS

The Central Fisheries Board and the seven Regional Fisheries Boards which were established in 1980 are responsible for the protection and development of inland fisheries and for the development of angling.

The annual report of the Central Board gives details of the activities of the Central and Regional Fisheries Boards during the year.

In July 1983, Superannuation Schemes in respect of the staffs of all of the Boards were signed by the Minister. The Schemes entitled "The Central and Regional Fisheries Boards' Staff Superannuation Scheme, 1983" and "The Central and Regional Fisheries Boards' Spouses' and Children's Contributory Pension Scheme, 1983" are operative from 29th October, 1980, i.e. the date on which the Boards were established.

Considerable progress was made on the Staff Scheme for field staff of the Boards provided for under Section 32 of the 1980 Act. The Scheme provides for common grades, salaries and conditions of service for the staffs of all Boards. It also provides for the redeployment of staff working on the development of brown trout and coarse fish to the relevant Regional Boards.

INTERNATIONAL SALMON CONVENTION

During 1983 the Convention for the Conservation of Salmon in the North Atlantic Ocean was ratified by the Governments of the participating States.

The Convention provides for the establishment of the North Atlantic Salmon Conservation Organisation (NASCO) which will be concerned with conservation of salmon stocks in the North Atlantic Ocean. It consists of a Council and three regional Commissions as follows:

Council – Canada, EEC, Faroe Islands, Iceland, Norway, Sweden, USA
North American Commission – USA, Canada
West Greenland Commission – USA, Canada, EEC
North East Greenland Commission – EEC, Faroe Islands, Iceland, Norway, Sweden.

SALMON LEVY

During 1983 a total of IR£6,828.52 was collected in respect of outstanding levies on first sales of salmon which was discontinued on 1st June 1982 and allocated towards the overall cost of conserving and developing inland fisheries.

EMPLOYMENT IN THE INDUSTRY

Exclusive of persons employed on the marketing and transport of fish, a total of 5,800 persons found either wholetime or part-time employment in inland fisheries during the year. This figure includes 4,300 persons estimated as being engaged in netting for salmon, 220 engaged in eel fishing, 450 employed by the Central and Regional Fisheries Boards on protection and development of fisheries, 800 engaged in netting and protection work in the Foyle Area and the remainder employed by proprietors of commercial and sport fisheries or by angling associations.

INSTRUMENTS OF CAPTURE

The number of the various types of licences issued in each fishery district and the rates of licence duty are given in Appendices Nos. 18 and 19.

IMPORTS AND EXPORTS OF LIVE AND DEAD FRESHWATER FISH

The Department continued to issue import licences for live and dead freshwater fish in accordance with the Fisheries Acts. Stringent conditions are attached to each licence. Export licences for salmon and trout are also issued by the Department. All licensing requirements are designed to ensure the disease free status and quality of imports and exports.

EXPORTS OF FRESHWATER FISH

Salmon

The total quantity of salmon exported in fresh, chilled, frozen, salted and preserved forms was 1,168 tonnes compared with 633 tonnes in 1982. Total value of these exports rose from IR£3,166,237 in 1982 to IR£5,249,246 in 1983. Details for the two years are as follows:–

	1982		1983	
	Tonnes	IR£'000	Tonnes	IR£'000
Fresh, Chilled, Frozen Salmon	400	1,675	1,026	3,835
Smoked Salmon	89	943	134	1,383
Prepared/Preserved Salmon	144	548	8	31

Of the total quantity of fresh, chilled and frozen salmon exported in 1983, 580 tonnes went to Great Britain, 255 tonnes went to France, 237 tonnes went to Northern Ireland, 23 tonnes went to the Netherlands and 10 tonnes went to Spain.

The smoked salmon was exported mainly to Germany (41 tonnes), U.S.A. (26 tonnes), France (22 tonnes) and Belgium/ Luxembourg (16 tonnes). Quantities of prepared and preserved salmon were exported to Great Britain (4 tonnes) and Northern Ireland (4 tonnes).

The average export price for fresh, chilled or frozen salmon was IR£3,739 per tonne as compared with IR£4,188 per tonne in 1982.

Rainbow Trout

Exports of Rainbow Trout in 1983 amounted to 205 tonnes valued at IR£208,500 as compared with 170 tonnes valued at IR£292,581 in 1982.

Eels

Exports of eels in 1983 amounted to 168 tonnes valued at IR£451,300 as compared with 176 tonnes valued at IR£476,511 in 1982.

ARTIFICIAL PROPAGATION

The production and distribution of salmon, sea trout and brown trout ova, fry, fingerlings and smolts produced at the various hatcheries are given in Appendix No. 22. The total output of ova in the 1982/83 spawning season was as follows:

Salmon	2,854,000
Brown Trout	2,388,000
Sea Trout	24,000

WATER POLLUTION CONTROL

The Department continued to exercise an advisory role in regard to the issue by local authorities of licences under the Local Government (Water Pollution) Act, 1977. During the year 164 applications for licences were processed by the Department's licence vetting committee.

The Department consulted, in the fisheries interest, with the Department of the Environment, the Department of Agriculture and the Central and Regional Fisheries Boards about water pollution matters. The Department is represented on the Water Pollution Advisory Council.

Water Quality Management Plan

The Department continued to collaborate with An Foras Forbartha in the preparation of draft water quality management plans.

Lough Sheelin

Considerable attention continued to be devoted to the problems of Lough Sheelin. In late 1980, a scheme was introduced to remove excess slurry from the Lough Sheelin catchment. Under this transport subsidy scheme, a subsidy is payable to

farmers outside the catchment to offset the cost of transporting slurry – which is provided free of charge by pig producers – to their farms for fertilization purposes.

The scheme is run by a Management Committee representing the various interests and is chaired by an Officer of the Department. The scheme worked satisfactorily in 1983 with over 12 million gallons of slurry removed during the year bringing the total number of gallons removed since inception of the scheme to 41.5 million gallons. The success of the Scheme is reflected in the continuing improvement in the quality of the lake water.

EEL FISHING DEVELOPMENT

As indicated in the paragraphs dealing with scientific investigations and engineering, research work continued during the year on the investigation of eel stocks and eel fishing techniques. Advice and information on eel fishing was given to interested persons. Forty two eel fishery authorisations were issued during the year bringing the number of fishing engines under such authorisations to seventy four.

MANAGEMENT OF STATE FISHERIES

In 1983, 133 State-run fisheries – in the main vested in the Land Commission – were managed by Fisheries Division. Rents received during the year amounted to IR£9,270 compared with IR£8,320 in 1982. Thirty six fisheries which fell due for re-letting were advertised during the year.

ACQUISITION OF FISHERIES

The Erriff Fishery in County Mayo was purchased by the Central Fisheries Board under the provisions of the Fisheries Act, 1980, during the year.

RESEARCH AND DEVELOPMENT

Salmon

The objectives of the research into salmon are:

(i) to monitor and describe the annual salmon catch taken by all classes of fishing methods;
(ii) to estimate seasonal abundance of salmon by relating catch to fishing effort;
(iii) to estimate the annual rate of escapement for spawning, the magnitude of survival at sea and its relationship to annual catch;
(iv) to describe salmon migrations;
(v) to determine the effectiveness of stocking with reared salmon smolts and to establish their contribution to the fishery and spawning stock biomass, mainly by tagging;
(vi) to monitor the occurrence of disease in wild salmon.

Salmon Stocks

The total reported catch of salmon in 1983 amounted to 1,515 tonnes. This was the highest recorded catch since 1975 when a catch of 2,188 tonnes was taken. As in previous years the majority of these salmon were 1+ sea winter fish. The catch of multi sea winter fish (mostly 2 sea winter) at 150 tonnes showed an increase when compared with 1982 but was on a par with the 5 year average (1973 to 1982) of 157 tonnes. The major portion of the national salmon catch (83%) was taken by the coastal and inshore drift nets. Draft nets accounted for 11% and a further 3% were taken in other forms of commercial engines. The rod catch amounted to 3%.

The average weight of individual salmon in the commercial catch was 3.07 kg and in the rod catch, 3.48 kg. In 1983 most of the rod caught fish were taken in the early part of the year and later in the month of September. Due to the very low water conditions in the months of June, July and August there was virtually no angling. Therefore, rod catches mainly in the early and late part of the season would account for their larger size. The greatest yield of rod caught fish came from the Kerry Fishery district where a total of 2,038 salmon were reported. The next highest catch was in the Sligo district, where 1,715 salmon were captured on rod and line; there are only two salmon rivers, the Garavogue and the Drumcliffe which are of importance in this district. The east coast, extending from Carlingford Lough to Kiln Bay, Co. Wexford produced 8% of the rod catch, but this same area accounted for only 1% of the commercial catch. On the other hand commercial salmon fishing was concentrated in the Northern Fisheries Region where 43% by number and 44% by weight were taken – mostly in coastal drift nets. The Kerry and Cork fishery districts accounted for a further 20.5% of the total. Therefore, in 1983, over 60% of the national salmon catch was taken in two of the seven Fisheries Regions.

In 1983 the Dublin Fish Market handled 124,490 salmon with a total weight of 378 tonnes. This represented 25% (by weight) of the recorded national catch. From the data supplied it was possible to calculate the numbers of fish arriving on a monthly basis and the average weight per month. The bulk of the fish arrived at this market in June and July – 53% and 42% respectively of the total. The highest average weight 4.56 kg. occurred in February and the lowest in June – 2.89 kg. The average weight of the fish handled was 3.04 kg, which is very close to the national average.

The data available in 1983 on catch per salmon licence provided an indication of the abundance of salmon and grilse in Irish coastal waters. The catch per licence showed an increase when compared to 1982 for all licensed engines with the

exception of fixed nets, the catches of which were only marginally less than in 1982. The drift net catch was the highest recorded for the 10 year period 1974-1983. The increase in catch seemed to indicate a greater abundance of fish around the coast. The table below gives the 5 year average from 1974-1978 and the catch for the years 1979 to 1983 for the fishing gear listed.

	Salmon Catch per licence (No. of fish)			
Year	Drift Net	Draft Net	Fixed engines	Snap net
1974-78	349	150	333	77
1979	277	74	179	25
1980	205	89	228	40
1981	171	35	291	17
1982	265	78	323	18
1983	510	97	305	29

The stock of salmon in a river is based on catch and escapement. In view of the fact that the majority of salmon were taken at sea in the drift net fishery, assessments of stock abundance based on a river by river basis are unavailable. To estimate the strength of the escapement we have to rely on fish counters which count the fish on their way upriver. Counters are maintained by the Department on a number of rivers and particulars of counts from these are given in the engineering section of this Report. In addition the E.S.B. operates fish counters on the Rivers Shannon and Erne and the Salmon Research Trust on the Burrishoole. In the river Shannon two counts are provided. Ardnacrusha covers one channel of the system and Parteen the other with the exclusion of the Mulcaire river. A five year count of the E.S.B. and S.R.T. counters is given hereunder.

	River Shannon				
	Ardnacrusha	Parteen	Burrishoole	Erne	Clady
1979	2683	1770	947	415	123
1980	1869	1617	696	433	344
1981	379	1426	386	660	139
1982	1406	803	500	678	249
1983	3104	1335	611	578	256
5 year average	1880	1390	628	553	222

From the data presented it can be seen that escapement in 1983 was higher than the 5 year average for the main arms of the Rivers Shannon, Erne and Clady, but in the case of the Burrishoole and Parteen it was marginally lower. To date, and on an international basis, it has not been possible to establish a correlation between escapement for spawning and the resulting

magnitude of national catches 3 to 4 years later. Therefore, survival of salmon at sea is clearly one of the most important questions yet to be answered.

Data on the length and weight of fish taken in June and July 1983 was obtained from the operator of a draft net at Villierstown in the Cork Blackwater and these were compared with the length and weight of fish taken in the south coast drift net fishery. A total of 44% of the fish sampled in the draft net fishery in June and July respectively were found to be mesh marked. This indicated a "drop out" of 53.5% for the combined period, from the coastal drift nets. The size range of the fish taken in a draft net was compared to those taken in the drift nets for the same period. In the month of June the dominant size range in the draft net was between 1 and 3 kg whereas the drift net sample was heavier at between 2.5 and 4.0 kg. In July a similar result was obtained. Indications were that the drift nets were selective of the larger component of the stock and that the draft net fishery was dependent, to an extent, on the drop outs from the drift nets for over 50% of its catch in the months of June and July, which is the peak of the drift net season. The escapement of the smaller component of stock into the rivers could also affect the quantity of egg deposition, because egg numbers are related to the size of the fish when spawning.

Salmon Migrations

The tagging of adult salmon in 1983 was confined to kelt tagging i.e. fish that had been impounded, stripped and released after tagging. A total of 212 kelts were tagged at Carrigadrohid rearing station on the River Lee and 7 recaptures were recorded. Two were recaptured as clean fish. One fish was taken off Brandon Head, Co. Kerry in a drift net and the other was taken in the tidal waters of the River Lee in a draft net. The remaining recaptures were made soon after release in the freshwater portion of the River Lee and were released after capture. There were 30 salmon kelts tagged at Virginia Hatchery on the River Boyne and there was only one recapture in the tidal waters of the Boyne soon after release.

Two groups of wild smolts were tagged with coded wire tags in the River Corrib in 1983. These consisted of a group of 1,989 smolts (<14 cm) and a group of 2,206 (>14 cm). The earliest return from these is expected in 1984. In addition to the above some 142,808 parr and smolts were tagged and released from the four major salmon rearing stations viz. Burrishoole, Parteen, Carrigadrohid and Cong in the 1982/83 season. These migrated to the sea in April/May 1983 and the first of the returns will be in the 1984 grilse run. All the rearing stations also clip the adipose fin of a percentage of their stock prior to release in order to identify the returning salmon as being hatchery reared.

Adult salmon were monitored in the major landing ports around the country for the presence of coded wire tags which were implanted in parr and smolts migrating in 1982. The numbers of adults examined in each of the areas together with the number of fish found with fin clips and coded wire tags is given hereunder.

Area	No. examined	No. with fin clips	No. with coded wire tags
Donegal	57,366	431	74
Mayo	22,095	462	122
Galway/Limerick	10,881	720	135
Kerry	26,963	416	92
West Cork	4,062	70	15
South coast	14,451	330	102

The fin clips denote the number of reared fish in the sample. In 1983 the largest concentration (6.5%) of salmon from reared stock was taken in the Galway/Limerick area. Likewise this area had the highest concentration of coded wire tagged fish. The next highest concentration (2.3%) of reared fish was recorded from the South coast and along the Mayo coast, of which 2.0% were of reared origin. In Kerry and west Cork 1.5% of the sample were of reared stock. The Donegal coast produced the lowest concentration of reared fish at 0.7%, which is not surprising, since it is the furthest distance from any of the major rearing stations.

The number of coded wire tags in the sample amounted to 540 grilse from a tagging of 78,957 smolts in 1983. It is expected that a small proportion of the 1983 tagged smolts will return in 1984 having spent 2 winters at sea. The highest return (4.1%) was obtained from smolts reared at Cong and released in the tidal waters of the River Corrib. By comparison, a similar group of smolts released in the Cong canal, gave a return of 0.69%. This represents a six fold increase in returns of smolts released in tidal waters compared to those released in the upper reaches of the Corrib. The fact that these smolts were released in tidal waters did not seem to affect their homing instinct because a number were taken in the hatchery trap at Cong in the Autumn of 1983. The River Corrib wild smolts gave a return rate of 4.7% for the smaller size group tagged (<14.5 cm) compared with 3.5% for the large size group (>14.5 cm). It is of interest to note that the return rate of reared smolts released in tidal waters was almost equal to that of the wild smolts.

A comparison was made between the return rate of early and late release of smolts in the lower freshwater reaches of the River Lee. A return rate of 1.9% was obtained from fish released on April 1 compared to 0.5% from fish released on February 11. In the case of the River Shannon a higher return rate was

obtained from the release of smolts at Castleconnell (0.9%) compared with releases in the Silver River (0.29%) or the River Brosna (0.4%).

No account is taken of fish which have escaped into freshwater except in the Burrishoole system where it is possible to monitor all fish entering the river. The return from 2 year old smolts tagged at the Salmon Research Trust installations amounted to 2.0% including returns from coastal inshore nets.

As well as the recapture of coded wire tagged fish in home waters there were a further eleven fish taken in the Exclusive Economic Zone of the Faroes Islands. These fish were captured in the longline high seas fishery between December 1982 and April 1983. All had been tagged in the 1981/82 season with the exception of two fish which belonged to the 1981 year class of smolts. The nine other fish were the progeny of the 1982 smolt year class and had spent one year at sea when captured. The size range of the fish was from 1.4 to 1.8 kg.

There were a total of 44 recaptures in Irish coastal waters of smolts tagged in other countries. There were 12 recaptures which had been tagged as smolts in the River Usk in S. Wales, 10 from the River Esk and 3 from the Tummel River, two Scottish east coast rivers. 10 others had been released in the Rivers Imsa and Ims and the sea west of Kvitsoy in Norway. There were 4 recaptures from Swedish west coast rivers and 5 from the River Allier in France.

Foreign tagged smolts were recaptured as adults right around the coast from the River Boyne to Torr Head, Co. Antrim. The highest numbers (22) were taken in the Donegal drift net fishery. A further 11 were taken in the Kerry/West Cork fishery and 7 in the North Mayo drift net area. The most interesting recapture was that of a fish tagged in the River Tummel in Scotland and recaptured in the upper tidal limits of the River Boyne at the Curly Hole.

Between April 26 and May 19 the Corrib smolt run was monitored. Based on a tag and recapture method the number of smolts migrating during the period was estimated at 94,872. The age composition of the migrating smolts was:

(a) 1 year old smolts – 45%
(b) 2 year old smolts – 49.4%
(c) 3 year old smolts – 5.6%

Juvenile salmonid population estimates in the River Corrib tributaries were continued in 1983 using the same method as in previous years. Three of the tributaries, in the River Owenriff and Bealnabrack on the west side of Lough Corrib and the Abbert on the east side, were examined in detail. The results obtained showed a dramatic increase in the numbers of 0+ salmon in these tributaries which was indicative of a successful

spawning in the 1982/83 season. The highest density of 0+ salmon was recorded in the Cornamona river at 7.0 per m^2. There was also a marked increase in the river Abbert when a population density of 2.5 per m^2 for 0+ salmon was recorded. The highest recorded density for this river hitherto was 1.7 per m^2. The increase in density in this system is attributed to the habitat improvement work undertaken by the Western Regional Fisheries Board. The Owenriff river was monitored from its source to its confluence with Lough Corrib. The area upstream of Lough Bofin was found to be unproductive but high densities of 0+ salmon were found in the lower reaches and its tributaries, the Bunowen and the Letterfore. The Bealnabrack river to its confluence with the Joyces river had 0+ salmon densities from 0.56 to 1.38 per m^2. The survival from 0+ to 1+ in this river was found to be significantly higher than for other rivers in this part of the system.

In general, in 1983, the juvenile salmon population of the Corrib system was higher than it has been since 1979 when the population surveys were initiated. The densities of 0+ salmon in the western tributaries were considered too high for optimum smolt production. In the tributaries examined there was no change in the trout population, which is an indication that the increase in the 0+ salmon does not appear to have adversely affected the density of trout.

Diseases

Reports of UDN in the spring run of fish were received from a number of areas including Waterville, the rivers Lee, Feale and Garavogue (including Lough Gill) the Drowes, Leannan and Lackagh. A few diseased fish were reported from the rivers Moy, Liffey, Dargle, Bonet, Drumcliffe, Lackagh and Drowes between May and September. The highest incidence of UDN occurred during the spawning season. It was reported to be very severe in the Cumeragh river, Killarney lakes and their tributaries, and in the rivers Bandon and Argideen. UDN was reported as absent from the rivers Barrow, Nore and Suir and the Cork Blackwater and from the rivers of the Western Fisheries Region for the entire year. The highest incidence of disease occurred in the River Feale in February when 100+ diseased fish were recorded.

Furunculosis is a serious disease of salmon. This disease is caused by the bacterium, *Aeromonas salmonicida*, which is one of the commonest bacteria present in fresh water. Because of its prevalence, it must be kept under close surveillance.

SEA TROUT

The objectives of the research being carried out on sea trout are:

(i) to monitor and describe the annual catches of sea trout by all types of fishing methods;

(ii) to determine the density of juvenile sea trout in a number of regions;
(iii) to describe the migratory and spawning habits of sea-trout.

Indicators of the sea trout catch in 1983 suggest an increase of 21% per rod licence compared with 1982 and there was a comparative increase in catch by all commercial methods. Based on weight per rod days, the return in 1983 at 0.85 lb (0.38 kg) was similar to 1982 at 0.82 lb (0.37 kg). The mean weight of sea trout taken by rod and line in 1983 was slightly lower than in 1982. The average weight of sea trout taken in the Burrishoole rod fishery was, however, marginally better at 0.80 lb (0.36 kg) as compared with 0.76 lb (0.34 kg) in 1982.

The Specimen Fish Committee recorded a total of 6 sea trout in excess of 2.7 kgs (6 lbs). The most interesting capture was a sea trout of 4.99 kgs (11 lbs) taken in the River Dodder in September. Two specimen sea trout were caught in Bell Harbour, Co. Clare. Lough Currane, where the majority of sea trout were taken in previous years, had only one specimen in 1983.

The only available data on smolt migration is from the Burrishoole Fishery where the total smolt production was 4,852. This showed an increase compared with the 1982 count of 3,907. It has been noted that the sea trout smolt production has not declined in parallel with the adult return in this fishery. The adult run, at 977, was the lowest recorded since census work began in 1970.

The decline in catch is attributed to poor marine survival due to fishing and/or natural mortality.

Draft and drift net returns were within the range previously recorded. Draft nets caught an average of 22 trout or 15.87 kgs per licence and drift nets caught an average of 2 trout or 3.63 kgs per licence.

A survey of juvenile salmonid densities throughout the Connemara region was completed in 1983. In all, eighty stream sites were electrically fished and the majority supported trout. Juvenile salmonids were located in the tributaries up to their first year of life. Thereafter they descended to the lakes which are 40 times greater in area than the stream bed. A similar survey of the Glencar system in Co. Kerry is underway.

Information was sought from anglers on the presence of marks, scars and other injuries on rod caught salmon and sea trout. In all 2,000 anglers were circulated but only 40 replies were received. Net marks were reported from salmon but in the case of trout, birds were the most notable cause of injury.

The value of protecting finnock was investigated and it was concluded that finnock conservation can have desirable effects by increasing the average weight of the catch but the rewards

are relatively small. A finnock is a sea trout that has spent less than a year feeding in the sea and a proportion of them spawn on return to freshwater. Characteristics of sea trout catches from the draft nets operating in the tidal waters of the River Feale and the River Blackwater were investigated. Both fisheries exploited short lived stocks. Scales and life data are being collected from the rod caught fish in the Arigadeen River, Co. Cork.

RAINBOW TROUT AND SALMONID CULTURE

During the year a large number of queries were dealt with in connection with establishing fish farms in both fresh and salt water, but expansion of the industry remains static. By the end of the year there were 10 commercial marine and 21 freshwater fish farms in operation.

The very high water temperatures in sea water in summer 1983, (up to 24°C) caused major husbandry problems and major losses of salmon and rainbow trout occurred. While effects in freshwater were not so severe in that major losses did not occur, the prolonged dry spell caused delays in feeding schedules and delays in production to market time.

A detailed survey of the quality and effects of fish farm effluents on adjacent rivers was carried out. The rivers involved were the river Ow in Co. Wicklow on which there are 4 production units between Aughrim and Woodenbridge and the River Slaney at Waterstown, where there is 1 new unit. Fourteen stations were examined and parameters measured were pH, dissolved oxygen, temperature, ammonia, nitrite, nitrate orthophosphate, BOD and suspended solids. Selected stations included intake water to each farm, pure effluent and river water about 250 yards downstream of discharge point when mixing and dilution should have occurred. Sampling was carried out in June, July and August during periods of low flow.

In all cases the river quality conformed to the permitted standards laid down in the planning permissions and the maximum BOD, ammonia and suspended solids values were obtained at two stations in the middle reaches of the River Ow.

Maximum values of Effluents

BOD mg/l	4.32 – 4.46
Suspended solids mg/l	4.95 – 6.13
Total Ammonia mg/l	0.355 – 0.209 @ pH 6.5 Temp 16°C
Minimum Dissolved Oxygen mg/l	5.3 – 6.6

Biological samples taken at stations downstream of the farms' effluents had a quality rating of 4-5 which indicated rapid recovery of the rivers downstream of the discharge points.

Analysis of fish feeds continued with some 50 samples of branded compound diets being examined. In general the protein

oil and fibre contents conformed to stated specification. Free fatty acid levels as a percentage of total oil exceeded 30% in 10% of samples examined – particularly in diets with high total oil. While not a precise confirmation of rancidity it does indicate a potential for rancidity to develop and such diets need to be stored under optimum conditions. There is considerable variation in the mineral contents and ratios of trace elements between brands and within a range of pellet sizes of a single brand. Iron levels in excess of 500 ppm were recorded in 15 samples. This is higher than that reported elsewhere. The implications are not clear, but it has been suggested that such high levels could depress the availability of other essential trace elements in the diets.

Zinc levels should be in the region of 150 mg Zn/kg (150 ppm) of feed to avoid cataract development. Levels of less than 100 ppm and as low as 60 ppm were noted regularly in one brand.

The work on the prediction of marine algal blooms and on a venturator aeration system continued at Kilmakillogue Harbour from July to September. As in 1982 no bloom occurred in the Southwest. However, a bloom of an organism previously unrecorded in Ireland "Flagellate X" was implicated in a major fish kill in a West of Ireland fish farm. It is becoming evident that continuous monitoring of phytoplankton development and succession is essential at all cage sites.

EEL RESEARCH AND DEVELOPMENT

The objectives of the research being carried out into eels are:

(i) to describe the eel fishery and monitor the incoming runs of elvers and the catches of silver and yellow eels;
(ii) to identify areas where eels grow best;
(iii) to maximise the production of this slow growing species as a long term project.

The year was notable for relatively low catches both of silver eels and of immigrating elvers. The poor silver eel catch was associated with an exceptionally dry autumn during which no major floods occurred. The run of silver eels therefore began late and it seems possible that many potential migrants failed to complete their passage out of freshwater. Greatly reduced runs of elvers were observed in all major elver fisheries in Europe. This indicates that the poor catch in Ireland was a reflection of events in the Atlantic Ocean rather than a result of local conditions.

Exploratory fishing took place in Lough Finn in Co. Donegal. This is a relatively deep, oligotrophic lake and notwithstanding local traditions of large eels stocks, was not expected to yield good returns. The experimental netting confirmed that the eel population was sparse and composed of slow-growing individuals.

Fewer than nine eels per ten nets were caught, most of them being below the ideal market size.

The intensive study of eels in Meelick Bay in Lough Derg continues to yield very valuable results. By the end of 1983 a total of 3,078 eels had been captured of which 2,679 were tagged and released within the bay. The pattern which is emerging is that the larger eels remain in the bay throughout the year. Smaller ones come into the bay from elsewhere in the lake in May but many of them leave again in June. Throughout July and August, increasing numbers of small eels come into the bay and the highest population numbers are found in Autumn. Observations on the benthic flora and fauna explained the fact that more eels are found in the eastern than in the western half of the bay. The principal food organism, *Asellus aquaticus*, was found to be much more plentiful in the eastern half and the eels evidently gathered where this prey species was more easily captured.

ENVIRONMENTAL STUDIES

The objectives of the environmental studies are:

(i) to study the effects of drainage upon fish populations;
(ii) to determine the best means of rehabilitating and restocking drained areas;
(iii) to advise, in particular, on the reconstruction of gravel spawning grounds;
(iv) to advise on the biological impact of water abstraction.

Some preliminary biological studies have been initiated on scheduled arterial drainage schemes. These include the Dunkellin and the Monaghan Blackwater. The hydrobiological investigations which were started in 1980 continued in 1983 on the River Bonet catchment and the open waters downstream. A number of visits were paid to the site to assess the zero state of the environment and the effects of the dredging upstream of Dromahaire. Silt traps were laid down to calculate the rate of silt deposition at varying distances from the dredger. The traps were left in position for 24 hours. The highest deposit, 3.0 kg per m^2, was recorded 19 metres from the dredger. Most of the silt had precipitated within 1,000 metres of the dredger.

In August 1983 juvenile salmon surveys continued on 6 sites in the middle and upper reaches of the River Bonet. The densities of juvenile salmon were higher than those shown in the investigations carried out in 1980 and 1981, varying from 1.1m^2 to 2.0m^2 and the density of brown trout was from 0.33m^2 to 0.74m^2. The density of small coarse fish species, including minnow and stoneloach, which were present in the middle reaches, was 0.7m^2. In April an acoustic survey of Lough Gill was undertaken and the fish stocks were evaluated by gill and fyke net. The fish species encountered were pike, perch, bream, eels, trout and salmon. Lough Gill was classified as a mixed

fishery with a good stock of large pike, perch and bream predominating and a small brown trout population. Salmon migrate through the lake to spawn in the River Bonet and the lake provides good angling for early run salmon and grilse.

In August 1983 a survey of the Stoneyford river, a tributary of the River Boyne, was undertaken with a view to recommending amelioration works to investigate the impact of arterial drainage on fisheries. Following the survey it was recommended that a section of the river 2,600 metres long should be rehabilitated initially to evaluate the creation of riffle pool sequence on the habitat. Structures recommended were low dams, current deflectors, random rock clusters and vegetation to create fly life.

A base line hydrobiological study was carried out on the Gweedore River in Co. Donegal to evaluate the present state of the fishery prior to the abstraction scheme. It was proposed to abstract 1/3 of the drought flow in the lower reaches of the river. The impact of the project was assessed in relation to salmon spawning and nursery area and the ascent of salmon with reduced water flow regime.

The impact of water abstraction from Lough Rea, Co. Galway was also investigated. This lake is regarded as the premier trout lake in Ireland. There was a proposal to raise the level of the lake and this would result in more favourable spawning conditions for pike which could adversely affect the trout fishery.

For the purpose of identifying typical mixtures of gravel sizes used by spawning salmon, a survey was carried out on six rivers and it is proposed to use these data to improve the rehabilitation of spawning stretches affected by arterial drainage works.

During 1983, spawning gravel mixtures from the rivers Boyne, Liffey, Slaney, Nore, Suir and Bonet were analysed. A collection of 60 samples from these areas showed that the mean diameter of the material found in salmon spawning sites varied from 0.06 mm to 128 mm.

A review of the literature suggests that the ideal size for spawning gravel diameters should lie within the range 4mm to 128mm, because material of smaller size tends to clog the spawning redds and larger gravel proves difficult for redd building. The following percentage distribution of gravel size will provide an ideal mixture for successful redd building and salmon spawning.

Size range of gravel	% occurrence in mixture
4 – 8 mm	10%
9 – 16 mm	20%
17 – 32 mm	30%
33 – 64 mm	30%
65 – 128 mm	10%

An equation was derived which accurately describes particular gravel mixtures and its co-efficients. This will be used together with geometric mean diameters and sorting co-efficients, when assessing results, and applying them to the different spawning grounds.

GRANT AIDED RESEARCH PROJECTS

Studentships

There were six post-graduate studies being carried out under the Department's studentship scheme namely:

1. The effect of sewage fungus slimes on survival and growth of river fishes (TCD).
2. Mass culture of invertebrates as food for cultured salmonids (TCD).
3. The ecology of streams and rivers on the Corrib catchment with reference to salmonid production (UCG).
4. A study of the ecology of amphipods in Lough Hyne (UCG).
5. Invertebrate Predator Prey Interactions in the lower basin of Lough Corrib (UCG).
6. Effects of organic waste disposal at sea on selected benthic organisms (UCG).

Three further projects were awarded in 1983 as follows:

1. The Ecology of Marine Shore Crytofauna (UCC).
2. The Ecology and activity pattern of roach (Rutilus rutilus) in the Corrib catchment (UCG).
3. The use of mitrochondrial DNA as a marker for Fish Species (UCD)

Bursaries:

Thirteen undergraduate students were employed on freshwater projects for a period of 8 weeks during the summer vacation to assist the Department's staff on the collection and processing of material. The students were recruited by interview from 3rd level colleges.

The projects undertaken by these students were as follows:

1. Eel Research.
2. Assessment of impact of Fin Fish Cage Culture Operations on an adjacent Environment.
3. Mariculture and Red Tides Research in Kilmakilloge Harbour, Co. Kerry.
4. Sampling of Adult Salmon.
5. Juvenile Salmon in the Corrib.
6. Parr surveys in the Ballinakill and Connemara Fishery Districts.
7. Sea Trout Census and related investigations in the Currane Fishery, Waterville, Co. Kerry.

ENGINEERING

Arterial Drainage

Drainage schemes which are currently in progress are already listed in the Report at page 31. In all of these schemes amelioration measures recommended by this Department are being incorporated in the works. Rehabilitation works are being carried out in the Camoge sub-catchment of the Maigue and on the river Robe. Flood relief work was carried out by O.P.W. in the Cong River to safeguard the early rearing facilities at Cong Salmon Hatchery.

Investigation of Inland Fish Movements

Smolt trapping and counting operations at the Galway sluice barrage on the River Corrib started on 17 April and continued until 28 June. During that period 11,063 salmon smolts were counted and released. The greatest number in any one day was 2,700 on 4 May. In the same period 4 salmon kelts, 2 sea-trout, 4 eels, 8 roach and the pike were trapped and released. Works on the improvement of this trapping and counting facility were initiated in December.

Water Abstractions

Water abstraction schemes, especially those for public water supply purposes continue to pose problems for fish stocks and angling and are kept under careful scrutiny by the Department. The impact of such schemes on lake levels, river flows, fish migration, stock levels and angling conditions is assessed, and measures to mitigate adverse effects are devised and recommended to the relevant Local Authority (see also page 32).

Fish Passes

Fish passes designed by officers of the Department were constructed by various agencies at the following locations: Scartleigh Dam on the River Feale, Portlaw Weir on the River Clodiagh, Sheen Falls on the River Sheen, Dalycross Weir on the River Suir and Cork Waterworks Head Weir on the River Lee.

Designs for fish passes for other sites, including Clohamon Weir on the River Slaney, Newport Weir on the River Newport and the outlet of Lough Guitane, were prepared by the Department.

Fish Culture Installations

The Department continued to advise the Salmon Research Trust of Ireland Inc. on fishery engineering matters. Advisory services were also provided to the Central and Regional Fishery Boards in respect of the various hatcheries and rearing stations under their care and in respect of proposed river improvement schemes. Officers of the Department supervised maintenance and improvement works as required.

Rainbow Trout Farming

Proposed fish farm sites were investigated and assessed. Suggested lay-outs were provided and, in some cases, detailed engineering designs were prepared and provided.

Electronic Fish Counters

Counting facilities were maintained at the sites listed below.

River	Location	Total Count	Max Count and Date	
			Count	Date
Blackwater	Clondulane	14,972	909	12.11.83
Boyne*	Navan	191	32	18. 9.83
Corrib**	Galway	544	80	28. 6.83
Liffey	Islandbridge	569	30	29. 6.83
Maigue	Adare	286	16	28.11.83

*Pass closed October, November, December. Trapping adult salmon

**Undercount due to hydraulic problems.

Counting installations on the River Lennon at Ramelton, the River Erriff at Ashleigh Falls and on the River Feale at Finuge have been temporarily decommissioned pending alterations and repairs to the fish-passes concerned. The counting installation at Ennistymon on the River Inagh has been temporarily decommissioned, pending review of research requirements. The counting installation at Cork Waterworks Weir has been decommissioned because of malicious damage.

Small Hydro Electric Projects

The growing interest in small-scale hydro electric schemes at old mill sites continues to pose problems in relation to migratory fish. During 1983 officers of this Department had to deal with such schemes on several rivers and give advice on measures relating to provision of fish passes, compensation water and screening.

FOYLE FISHERIES COMMISSION

The Commission is a statutory North/South body and is comprised of a senior and junior member appointed by the Minister for Fisheries and Forestry and a senior and junior member appointed by the Department of Agriculture for Northern Ireland. The post of Chairman rotates each year between the senior members of the Commission. During 1983 it was held by the Belfast member.

Detailed information on the Commission's activities during the year 1983 are given in the Commission's own Annual Report.

The spawning count of 3,153 redds in 1983 was 362 less than the previous year's figure of 3,515. The catch of salmon and grilse by commercial engines amounted to 83,252 fish (284,311 kg) compared with 60,157 fish (177,094 kg) in 1982. The rod catch of salmon and grilse was 831 fish as against 2,125 for 1982 while the rod catch of sea trout was 6,757 fish compared with 4,999 for the previous year.

The operation of the Commission's commercial fishery in the year ended 30 September, 1983 resulted in a deficit of £4,054 sterling compared with a deficit of £5,295 sterling in 1982. This deficit is due largely to a lower catch of fish and the price per lb. of salmon being not as high as hoped. Each year the profit/deficit realised on the operation of the commercial fishery is credited/debited to the Commission's Accumulated Revenue Account.

During the year under review, the Department of Fisheries and Forestry and the Department of Agriculture for Northern Ireland (Fisheries Division) paid subventions totalling £181,166 sterling to the Commission to meet its deficit at 30 September, 1983. This is an increase of £18,384 sterling over the deficit for 1982 and is mainly due to increases in wages and salaries and operation costs generally during the year.

The Commission's Accounts for the year ended 30 September, 1983 are included as an appendix to its 1983 Annual Report. Particulars of Regulations made by the Commission in 1983 are included in Appendix No. 20 of this Report.

FOYLE FISHERIES (AMENDMENT) ACT, 1983

During the early part of the year the Foyle Fisheries (Amendment) Bill, 1981, was passed by both Houses of the Oireachtas and became law as the Foyle Fisheries (Amendment) Act, 1983 (No. 2 of 1983) on 3 March, 1983. The purpose of the Act is to make provision for increased penalties in respect of offences under the Foyle Fisheries Acts, 1952 to 1976, committed in the Moville Area which is the part of the Foyle Area located in Co. Donegal. The Department of Agriculture for Northern Ireland has made parallel legislation in respect of the Londonderry Area which is the part of the Foyle Area situated in Northern Ireland. Both pieces of legislation came into operation on 16 May, 1983.

THE SALMON RESEARCH TRUST OF IRELAND INCORPORATED

The Annual Report of the Trust for 1983 gives a detailed account of its work during the year.

The Trust continued to make a valuable contribution to our knowledge of the salmon and factors bearing on its future survival as a species. The Trust is funded jointly by the Department and Messrs Arthur Guinness, Son and Co Ltd. The grant-in-aid paid to the Trust by the Department in 1983 amounted to IR£60,000.

The number of salmon (2-sea-winter fish) recorded in the traps was 29 in 1983, slightly below the annual average of 30 fish for the period 1970-82. The count of grilse (1-sea-winter fish) was 545, an improvement on the totals recorded in 1981 and 1982 but significantly lower than the annual average recorded for previous years. The total wild spawning escapement (including salmon and previously spawned fish) of 563 was the third lowest yet recorded and the survival rate from grilse female spawners in 1979 to adult grilse of the succeeding generation (1983) fell to a level only just above half that necessary for a self-sustaining population. Heavy exploitation by coastal nets continues to be the main cause of the decline in population numbers.

The 1983 salmon smolt run was normal in timing, the majority of the smolts migrating downstream between May 10 and 20. Only 9,508 salmon smolts were counted through the traps and this may be compared with the 1970-79 average of 12,290. A trend is emerging in the accumulated data in which low spawning escapements are associated with increased survival amongst their progeny. Despite these compensatory mechanisms, the overall smolt production has fallen by approximately 30% in recent years due to reduced spawning escapements of adults.

A three year programme of smolt sampling (1981-83) showed the percentage smolt age composition to be similar in all three years. The majority (92%) are 2 years old smolts with small numbers of 1 year old smolts (3%) and 3 years old smolts (5%). An investigation over the same period of the diurnal timing of downstream migration also gave consistent results. Early migrants moved downstream by day and night, the peak of the run migrated mainly by day and in the latter part of the smolt run night time migration predominated. The recapture rate of previously spawned grilse, tagged as kelts in 1983, increased to 13.5%, higher than is normally recorded (7%). A total of 36.4% of all wild 2-sea-winter fish and 20% of all wild grilse during June and July were net marked.

The run of sea trout continued to decline in 1983. Only 966 fish were counted through the traps, the lowest total recorded since full trapping facilities became available in 1970.

The proportion of finnock (0+ sea years) was 29%. The reduction in the sea trout stock can be attributed only to decreased marine survival since freshwater production levels have remained relatively constant. The sea trout smolt number was above average in 1983 at 4,852 fish, but only 1,574 autumn migrating trout were counted through the traps during the preceding year (1982), the lowest total yet recorded. These autumn

migrating trout are known to contribute to the sea trout smolt production but survive less well than spring-migrating smolts.

Analysis of scales from rod-caught sea trout confirmed the trend for an increased finnock proportion, a further decrease in the proportion of 1 year old maiden fish and a low incidence of previous spawners. This suggests that it is the older and larger fish (the most likely targets of illegal marine exploitation) which are failing to survive in the sea.

A total of 297 maiden grilse were recaptured in the Burrishoole system from reared smolts released in 1982. This represents a recapture rate of 1.66% with 2+ smolts giving a higher return rate (2.7%) than 1+ smolts (0.9%). The average weight of reared grilse increased in 1983. Fish derived from 1+ reared smolts weighed 2.3 kg (5.08 lbs) whilst those from 2+ smolts were larger at 2.6 kg (5.72 lbs). The largest reared grilse weighed 4.57 kg (10.05 lbs).

One 2-sea-winter fish was recaptured from a grilse parentage smolt released in 1981. This fish forms part of a small proportion (1.5%) of recaptures as 2-sea-winter fish derived from grilse parentage smolts over 4-5 generations of line breeding for grilse.

Coded-wire tagging experiments carried out by the Department of Fisheries showed that 65.5% of the reared grilse derived from smolts released by the Trust were caught in coastal nets during the legal fishing season. On return to fresh water, 12.8% of all trap caught and 22.9% of rod caught reared grilse were found to be net-marked. A total of 1,300 reared one year old sea trout smolts were released in 1983. The recapture rate as finnock was very low at 0.3% (only 4 fish). Wild sea trout smolts of various ages and tagged in an identical manner gave a recapture rate of 2.7%. One year old sea trout smolts rarely occur naturally in the Burrishoole system and it is thought that these reared yearlings may not have transformed fully to the smolt stage. The minimum recapture rate of 2+ reared smolts released in 1982 was 6.6% at the end of 1983. Tag loss from reared sea trout was very high in 1983, 71% of all fish having shed their tags.

14,914 reared smolts were released in 1983, comprising six different experimental groups. Three groups totalling 7,320 fish were 1+ smolts of grilse and 2 sea winter parentage. The remaining 7,594 fish were 2+ smolts. All fish were microtagged and either panjetted or cold branded.

Survival of grilse parentage eyed ova to end of year parr was 61.3%. No 2-sea winter fish ova were hatched or laid down in 1983.

The sea trout ova which hatched in 1983 and which were derived from reared parentage all died at the mid-alevin stage. No causative agent was found and it is possible that the deaths

may have had a congenital origin. Sea trout ova laid down in November and December 1983 were obtained from three sources: Wales, Waterville and (native) Burrishoole. The survival rates from eggs of Burrishoole and Connemara stocks of sea trout have been very low in recent years. By comparing the performances of three different stocks at two locations and experimenting with different rearing regimes, it is hoped to determine the cause(s) of earlier losses.

Disease problems amongst the reared salmon population were minimal during 1983. Some furunculosis was recorded in 1+ salmon parr, but there were no serious outbreaks.

Groups of reared smolts were imprinted in a solution of morpholine in 1981, '82 and '83. A morpholine drip was then located on the Salmon Leap in 1982 and Mill Race in 1983. The siting of the drip on either the Mill Race or Salmon Leap has failed to produce conclusive results. The choice of the fish between the two routes of upstream migration is dependent not only on the presence or absence of a morpholine drip but on a number of other variables. These include water height and timing of the run. Small numbers of returning morpholine-imprinted adults made it more difficult to assess the effectiveness of artificially imprinting reared salmon smolts.

In view of recent concern over the "acid rain" phenomenon, the pH of local rainfall and the outflowing water was measured on a regular basis throughout the year. The mean annual values were 6.44 for rainfall and 6.81 for the Mill Race water, indicating that no pollution exists as yet from acid rain.

The catch of salmon (130 fish) was the best for six years, but that of sea trout (250 fish) continued to decline and was the lowest recorded for 44 years. The exploitation rate (proportion of fish caught from total stock available) of wild salmon was in the range normally recorded, 11.4-12.5%. The increased salmon catch was due largely to an increased exploitation rate of reared salmon on L. Furnace (30.1%). Drought conditions during the summer prevented upstream migration to L. Feeagh and concentrated the grilse in L. Furnace, resulting in above average catches from this lough. Low stock levels and unfavourable trout fishing conditions brought about the poor sea trout catch.

The completed study of genetic variation throughout the range of the salmon shows that three major population groups exist, viz: North American, Western European and Eastern Scandinavian. Further tissue samples were obtained for analysis from the Faroes commercial catch.

The electrophoretic survey of local brown trout and sea trout was also completed. This showed that significant genetic differences occurred between all samples except for the sea trout

and brown trout that freely intermixed, suggesting that the migratory habit is not associated with reproductive isolation.

INTERNATIONAL AND OTHER CONFERENCES

During the year the Department was represented at the following conferences, committees and working groups etc:–

Abroad

International Council for Exploration of the Sea (I.C.E.S.) – Gottenburg, Sweden.
I.C.E.S./E.I.F.A.C. Working Group on European Eels – Stockholm, Sweden.
I.C.E.S. Planning Group on Salmon Research in the Faroes Islands – Aberdeen, Scotland.
West European Fishery Technologists Association – Ijmuiden, Netherlands.
West European Fishery Technologists Working Group – Hamburg, Germany.

Home

Foyle Fisheries Commission
The Water Pollution Advisory Council
River Erne Joint Protection Committee
Steering Committee on E.E.C. sponsored Environmental Impact Assessment of Arterial Drainage
Lough Sheelin Slurry Transport Management Committee
Pollution Control Committee, Donegal County Council
Water Resources Advisory Committee of An Foras Forbartha
N.B.S.T. Salmonid Advisory Committee
Foras Forbartha Seminar on Implementation of Legislation on Water Quality and Waste Disposal
Institute of Fisheries Management Conference, Derry
Irish Search and Rescue Committee
Interdepartmental Environment Committee
Irish National Committee for the International Commission on Irrigation and Drainage

LEGISLATION

The Foyle Fisheries (Amendment) Act, 1983 (No. 2 of 1983) was enacted on 3 March, 1983. Particulars of the Statutory Instruments relating to Inland Fisheries made during the year are included in Appendix No. 20.

APPENDIX No. 1

Quantity and Value of Sea Fish (excluding Salmon) returned as landed by Irish registered vessels in Irish Ports during 1982 and 1983.

Species	Quantity (tonnes)		Value (IR£000)	
	1983	1982	1983	1982
DEMERSAL				
FLAT FISH				
Brill	91	98	151	140
Dabs	426	270	94	47
Lemon Sole	271	213	167	124
Megrims	1,596	1,225	623	330
Plaice	2,223	1,574	1,644	1,086
Sole	411	370	1,204	1,019
Turbot	216	257	571	594
Other Flat Fish	53	41	19	13
ROUND FISH				
Cod	6,781	8,342	3,922	4,021
Haddock	3,838	4,592	1,471	1,357
Hake	986	781	922	596
Ling	524	189	192	56
Saithe	2,500	2,154	868	722
Whiting	8,313	10,840	2,087	1,976
OTHER DEMERSAL				
Dogfish	4,233	1,152	842	232
Monkfish	1,516	972	1,254	729
Ray/Skate	1,852	1,641	933	764
Other Demersal	181	206	105	102
TOTAL DEMERSAL	36,011	34,917	17,069	13,908
PELAGIC				
Herring	32,025	29,734	5,229	5,233
Sprat	5,511	4,109	489	302
Horse Mackerel	15,086	–	1,874	–
Mackerel	65,537	110,363	8,542	12,456
TOTAL PELAGIC	118,159	144,206	16,134	17,991
TOTAL WETFISH	154,170	179,123	33,203	31,899
CRUSTACEANS				
Crabs	1,686	1,394	569	430
Crawfish	111	110	877	775
Dublin Bay Prawns	5,545	5,147	5,496	4,725
Lobsters	400	367	2,532	1,948
Palaemonid Shrimps	69	142	241	448
TOTAL CRUSTACEANS	7,811	7,160	9,715	8,326
MOLLUSCS				
Escallops	418	603	448	500
Queen Escallops	7	14	4	8
Mussels	5,739	5,282	659	466
Oysters	316	861	579	1,759
Periwinkles	1,512	1,317	526	442
Palourdes	2	3	5	6
Squid	192	372	201	301
Other Molluscs	18	10	42	22
TOTAL MOLLUSCS	8,204	8,462	2,464	3,504
Sea Urchins	48	97	50	79
TOTAL ALL FISH	170,233	194,842	45,432	43,808

In addition to the above landings into the Republic, 28,187 tonnes of fish and 127 tonnes of shellfish valued at IR£6,428,524 and IR£95,125 respectively were landed directly into foreign ports or transhipped at sea for export by Irish registered vessels during 1983.

APPENDIX No. 2

Comparison of the Average Price per tonne of various kinds of Sea Fish 1975-1983

SPECIES	1975	1976	1977	1978	1979	1980	1981	1982	1983
	£	£	£	IR£	IR£	IR£	IR£	IR£	IR£
Sole	1,200	1,485	1,732	2,093	2,184	2,192	2,565	2,759	2,932
Brill	477	515	680	740	826	866	1,145	1,423	1,661
Turbot	510	799	1,145	1,231	1,444	1,389	1,781	2,314	2,643
Plaice	276	364	457	519	557	514	575	690	740
Dabs	114	143	176	195	215	193	166	173	221
Megrims	114	149	230	206	260	229	322	269	390
Ray/Skate	200	228	262	306	375	372	428	466	504
Cod	173	242	375	406	448	375	411	482	578
Haddock	181	188	327	365	373	291	258	296	383
Hake	176	288	456	428	571	499	674	764	936
Whiting	90	109	205	217	228	167	177	182	251
Saithe	118	142	255	301	312	297	293	335	347
Herring	112	142	261	295	287	255	170	176	163
Mackerel	44	61	77	63	74	83	105	113	130
Sprats	17	25	33	38	67	75	63	74	89

N.B. – "Average price" as shown in this table represents total value divided by total weight for each kind of fish, year by year. It does not purport to take direct cognizance of any abnormal rise or fall in price attributable to a seasonal glut or shortage of a particular kind of fish.

APPENDIX No. 3

Value and Quantity of Landings of Sea Fish (excluding Salmon) at ports at which the value of such Landings exceeded IR£200,000 in 1983

	Total		DEMERSAL		PELAGIC		SHELLFISH	
	IR£'000	Tonnes	IR£'000	Tonnes	IR£'000	Tonnes	IR£'000	Tonnes
1. Killybegs	9,815	63,347	2,001	4,865	7,784	58,461	30	21
2. Castletownbere	3,379	10,002	2,113	3,587	829	6,065	437	350
3. Rathmullen	2,811	20,831	–	–	2,806	20,823	5	8
4. Howth	2,793	5,571	2,117	4,466	61	456	615	649
5. Greencastle	2,564	6,151	2,514	6,108	*	1	50	42
6. Rossaveel	2,209	7,191	883	2,331	586	4,035	740	825
7. Dunmore East	2,109	5,198	1,113	2,114	432	2,581	564	503
8. Skerries	1,948	2,825	382	851	33	252	1,533	1,722
9. Burtonport	1,570	7,017	618	1,327	828	5,546	124	144
10. Kilmore Quay	1,432	1,777	853	1,239	2	16	577	522
11. Clogherhead	1,423	1,773	375	711	4	29	1,044	1,033
12. Valencia	1,096	2,075	664	1,256	97	603	335	216
13. Galway	749	4,097	32	86	623	3,981	94	30
14. Dingle	735	1,939	399	954	123	827	213	158
15. Achill	732	2,447	253	692	272	1,684	207	71
16. Cobh	645	4,530	135	232	502	4,294	8	4
17. Killala/ Kilcummin	636	1,224	610	1,217	*	1	26	6
18. Moville	578	4,020	–	–	550	4,006	28	14
19. Balbriggan	549	687	134	268	2	13	413	406
20. Helvick	382	882	282	580	35	245	65	57
21. Clifden/ Cleggan	328	386	75	132	34	203	219	51
22. Schull	269	759	148	332	40	276	81	151
23. Union Hall	262	669	154	330	37	271	71	68
24. Belmullet	262	75	8	16	–	–	254	59
25. Carna	261	91	5	6	–	–	256	85
26. Arklow	241	389	198	320	5	36	38	33
27. Cromane	240	2,477	1	1	–	–	239	2,476
28. Clarinbridge	233	136	–	–	–	–	233	136
29. Tully/Renvyle	231	193	3	5	–	–	228	188
30. Roundstone	220	82	17	18	6	30	197	34
31. Wexford	214	2,932	9	6	–	–	205	2,926

* Indicates a value of less than IR£500.

APPENDIX No. 4

Imports and Exports of Fish and Fishery Products in 1983
(as compared with 1982)

	Quantity		Value	
	1983 Tonnes	1982 Tonnes	1983 IR£'000	1982 IR£'000
I IMPORTS:				
Fish: Fresh, chilled	19,553	12,335	3,911	2,913
Fish: Frozen	3,270	11,107	2,994	5,061
Fish: Salted, Dried, Smoked	1,143	1,335	1,847	2,069
Shellfish: Fresh, Salted or Dried	466	408	1,880	1,868
Prepared or preserved fish	6,786*	5,764*	16,042*	13,203*
Prepared or preserved shellfish	139	95	451	346
Fishmeal and fish oils	6,875	12,040	2,682	3,944
TOTALS	38,232	43,084	29,807	29,404
II EXPORTS:				
Fish: Fresh, Chilled	43,068	51,019	18,542	15,995
Fish: Frozen	81,412	90,487	32,096	29,337
Fish: Salted, Dried or Smoked	12,839	10,622	9,184	7,136
Shellfish: Fresh, Salted or Dried	8,963	7,920	15,227	13,616
Prepared or preserved fish	974*	1,134*	1,286	1,616*
Prepared or preserved shellfish	720	641	1,108	1,034
Fishmeal and fish oils	3,381	3,450	922	759
Landed directly by Irish registered vessels into foreign ports.				
Fish	28,187	11,241	6,429	3,170
Shellfish	127	49	95	66
TOTALS	179,671	176,563	84,889	72,729

* Includes prepared and preserved fish products previously classified as frozen.

APPENDIX No. 5

Herring Fishing 1983

Ports at which more than 1,000 tonnes were landed	Total Quantity Tonnes	Total Value IR£'000
1. Killybegs	12,406	2,195
2. Rossaveel	3,222	487
3. Dunmore East	2,522	417
4. Cobh	2,293	327
5. Burtonport	2,103	378
6. Achill	1,510	256
7. Castletownbere	1,370	210
8. Rathmullen	1,182	209

APPENDIX No. 6

Mackerel Fishing 1983

Ports at which more than 1,000 tonnes were landed	Total Quantity Tonnes	Total Value IR£'000
1. Killybegs	31,039	3,723
2. Rathmullen	19,641	2,598
3. Galway	3,981	623
4. Moville	3,977	545
5. Burtonport	3,443	450
6. Castletownbere	1,618	342

APPENDIX No. 7

Regional Distribution and Classification of Fishing Craft and of Personnel Engaged in Fishing in 1983

ICES Statistical Areas	How Engaged	Men	Total Vessels	Motor Vessels							Boats propelled by outboard engines, sails or oars	
				Gross Tons								
				Over 100	75-99	51-74	26-50	16-25	11-15	10 and under	18' Keel and upwards	18' Keel and under
AREA VIIA (Omeath to Helvic)	Solely	867	343	13	26	42	58	5	11	127	61	–
	Partially	602	137	–	–	2	–	–	–	28	97	10
	Laid-up	–	25	2	–	4	4	2	–	–	13	–
	Totals	1,469	505	15	26	48	62	7	11	155	171	10
Area VIIGH (Ardmore to Clonakilty)	Solely	225	92	–	1	–	7	6	18	60	–	–
	Partially	263	82	–	–	–	–	–	–	3	79	–
	Laid-up	–	–	–	–	–	–	–	–	–	–	–
	Totals	488	174	–	1	–	7	6	18	63	79	–
Area VIIJK (Union Hall to Ballyduff)	Solely	973	378	18	6	18	21	11	37	216	51	–
	Partially	850	224	–	–	–	–	1	–	46	155	22
	Laid-up	–	10	2	–	2	1	1	–	4	–	–
	Totals	1,823	612	20	6	20	22	13	37	266	206	22
Area VIIBC (Kilrush to Mullaghmore)	Solely	463	133	11	5	7	17	13	7	66	7	–
	Partially	2,140	951	–	–	–	2	4	2	296	483	164
	Laid-up	–	15	1	–	–	–	–	–	14	–	–
	Totals	2,603	1,099	12	5	7	19	17	9	376	490	164
Area VIA (Bundoran to Moville)	Solely	903	146	34	4	24	32	14	7	31	–	–
	Partially	1,286	484	–	–	–	3	6	8	160	255	52
	Laid-up	–	–	–	–	–	–	–	–	–	–	–
	Totals	2,189	630	34	4	24	35	20	15	191	255	52
TOTALS (All Areas)	Solely	3,431	1,092	76	42	91	135	49	80	500	119	–
	Partially	5,141	1,878	–	–	2	5	11	10	533	1,069	248
	Laid-up	–	50	5	–	6	5	3	–	18	13	–
	Totals	8,572	3,020	81	42	99	145	63	90	1,051	1,201	248

For comparison purposes with previous years the I.C.E.S. Areas VIIGH and VIIJK together would equate with the former I.C.E.S. Area VIIGK

APPENDIX No. 8

Expenditure on Fisheries for the years ended 31 December 1982 and 31 December 1983

	1 Jan.–31 Dec 1983 (IR£)	1 Jan.–31 Dec. 1982 (IR£)
1. Sea Fisheries		
A. By Department of Fisheries and Forestry (Fisheries Division)		
(i) Development	281,000	322,000
(ii) Fishery Harbours and other marine works	2,384,000	3,931,000
B. By An Bord Iascaigh Mhara		
(i) Administration and Current Development (grant-in-aid)	4,745,000	5,410,000
(ii) Capital Development (grant-in-aid)	2,279,000	3,075,000
(iii) Repayable Advances	3,000,000	2,500,000
(iv) Repayment of Advances written off	500,000	800,000
C. Roinn na Gaeltachta Grants for marine works	217,000	116,000
2. Inland Fisheries		
A. By Department of Fisheries and Forestry (Fisheries Division) (grant-in-aid)	5,101,000	5,141,000
B. By the Salmon Research Trust of Ireland Incorporated (grant-in-aid)	60,000	54,000
3. Department of Fisheries and Forestry Salaries, wages and other administrative expenses for Fisheries Division.	1,745,000	1,817,000
TOTALS	20,312,000	23,166,000

APPENDIX No. 9

Coastal Extent of Fisheries Regions and Names of the Principal Rivers in each Region

Fisheries Region	Coastal Extent of Region	Principal Rivers
Eastern	Carlingford Lough, Co. Louth to Kiln Bay, Co. Wexford and seawards to a line twelve miles from baselines.	Fane, Dee, Clyde, Boyne Blackwater, Deel, Liffey, Vartry, Slaney, Avoca.
Southern	Kiln Bay, Co. Wexford to Ballycotton Pier, Co. Cork and seawards to a line twelve miles from baselines.	Suir, Barrow, Nore, Blackwater Funcheon, Bride, Awbeg
South Western	Ballycotton Pier, Co. Cork to Kerry Head, Co. Kerry and seawards to a line twelve miles from baselines.	Lee, Owenboy, Bandon, Argideen, Ilen, Mealagh, Owvane, Coomhola, Glengarriff, Adrigole, Roughty, Sheen, Finnihy, Blackwater, Sneem, Laune, Flesk, Maine, Caragh, Currane, Cummeragh, Inny.
Shannon	Kerry Head, Co. Kerry to Hag's Head, Co. Clare and seawards to a line twelve miles from baselines.	Shannon, Deel, Fergus, Mulcaire, Little and Upper Brosna, Inny, Maigue, Feale.
Western	Hag's Head, Co. Clare to Pigeon Point, Co. Mayo and seawards to a line twelve miles from baselines.	Corrib, Claregalway, Ballinahinch, Recess, Cashla, Owengowla, Invermore, Inverbeg, Screebe, Furnace, Culfin, Errif, Bundorragh, Dawross, Carrowniskey, Bunowen, (Louisburgh)
North Western	Pigeon Point, Co. Mayo to Mullaghmore Head, Co. Sligo and seawards to a line twelve miles from baselines.	Newport, Burrishoole, Owenduff, Owengarve, Owenmore, Glenamoy, Moy, Cloonaghmore, (Palmerstown), Easkey, Ballisodare, Garavogue (Sligo), Bonet, Drumcliff.
Northern	Mullaghmore Head, Co. Sligo to Rossan Point, Co. Donegal and seawards to a line twelve miles from baselines.	Erne, Bundrowes, Bunduff, Eske, Eaney, Water, Oily Glen, Owenea, Gweebarra, Gweedore, (Crolly), Clody, Lackagh, Lennon, Crana.

APPENDIX No. 10

Quantity and Value of Salmon and Sea Trout taken in 1981, 1982 and 1983 by Instruments of Capture

SALMON

Instruments	Quantity (kg)			Value (IR£)		
	1983	1982	1981	1983	1982	1981
Total for rod & line	49,555	40,439	40,914	218,488	177,932	144,321
Total for drift nets	1,254,219	689,966	492,433	5,529,852	3,035,850	1,737,007
Total for draft nets	172,099	139,892	80,717	758,784	615,525	284,718
Total for stake nets, weirs etc.	38,671	37,508	41,151	170,500	165,035	145,157
Total for all engines	1,514,544	907,805	655,215	6,677,624	3,994,342	2,311,203

SEA TROUT

Instruments	Quantity (kg)			Value (IR£)		
	1983	1982	1981	1983	1982	1981
Total for rod & line	10,877	9,341	10,542	35,958	31,853	44,173
Total for drift nets	4,317	1,974	3,012	14,272	6,731	12,622
Total for draft nets	6,430	5,822	4,455	21,257	19,853	18,665
Total for stake nets, weirs etc.	415	69	226	1,371	235	946
Total for all engines	22,039	17,206	18,235	72,858	58,672	76,406

APPENDIX No. 11

Quantity and Value of Salmon taken in 1981, 1982 and 1983 by Fisheries Regions

REGION	*	Quantity (kg)			Value IR£		
		1983	1982	1981	1983	1982	1981
Eastern							
Dundalk	R	462	477	302	2,037	2,099	1,064
District	N	2,589	4,564	3,270	11,415	20,082	11,534
Drogheda	R	1,392	1,182	1,491	6,137	5,201	5,259
District	N	16,087	10,498	9,127	70,928	46,191	32,197
Dublin	R	455	215	684	2,006	946	2,411
District	N	10	31	1,127	44	136	3,977
Wexford	R	3,084	405	95	13,597	1,782	336
District	N	4,178	5,439	8,033	18,421	23,932	28,336
TOTAL	R	5,393	2,279	2,572	23,777	10,028	9,070
	N	22,864	20,532	21,557	100,808	90,341	76,044
Southern							
Waterford	R	3,641	1,443	5,106	16,053	6,349	18,012
District	N	86,779	45,588	79,454	382,609	200,587	280,264
Lismore	R	1,648	1,992	879	7,266	8,765	3,101
District	N	61,504	23,880	60,178	271,171	105,072	212,272
TOTAL	R	5,289	3,435	5,985	23,319	15,114	21,113
	N	148,283	69,468	139,632	653,780	305,659	492,536
South Western							
Cork	R	1,651	709	2,913	7,279	3,119	10,275
District	N	101,286	30,837	57,950	446,570	135,683	204,415
Kerry	R	6,576	4,252	2,755	28,994	18,709	9,720
District	N	176,330	126,391	62,772	777,439	556,120	221,422
TOTAL	R	8,227	4,961	5,668	36,273	21,828	19,995
	N	277,616	157,228	120,722	1,224,009	691,803	425,837
Shannon							
Limerick	R	4,658	3,006	3,571	20,537	13,226	12,595
District	N	42,518	23,135	29,360	187,462	101,794	103,564
TOTAL	R	4,658	3,006	3,571	20,537	13,226	12,595
	N	42,518	23,135	29,360	187,462	101,794	103,564
Western							
Galway	R	1,939	1,564	3,256	8,549	6,881	11,486
District	N	71,608	20,189	34,225	315,720	88,832	120,724
Connemara	R	1,635	1,532	486	7,209	6,741	1,714
District	N	18,075	8,847	8,284	79,692	38,927	29,220
Ballinakill	R	1,832	1,970	449	8,077	8,668	1,582
District	N	9,176	7,205	9,492	40,457	31,702	33,484
TOTAL	R	5,406	5,066	4,191	23,835	22,290	14,782
	N	98,859	36,241	52,001	435,869	159,461	183,428
North Western							
Bangor	R	3,080	2,544	3,385	13,580	11,194	11,942
District	N	102,461	45,968	9,441	451,751	202,259	33,301
Ballina	R	4,939	6,244	5,850	21,776	27,474	20,637
District	N	106,384	87,054	77,778	469,047	383,038	274,351
Sligo	R	5,309	3,971	6,235	23,407	17,472	21,995
District	N	18,403	8,507	10,106	81,139	37,431	35,646
TOTAL	R	13,328	12,759	15,470	58,763	56,140	54,574
	N	227,248	141,529	97,325	1,001,937	622,728	343,298
Northern							
Ballyshannon	R	2,604	3,903	320	11,481	17,173	1,128
District	N	36,857	41,693	30,504	162,502	183,449	107,600
Letterkenny	R	4,650	5,029	3,137	20,502	22,128	11,064
District	N	610,744	377,541	123,200	2,692,770	1,661,180	434,575
TOTAL	R	7,254	8,932	3,457	31,983	39,301	12,192
	N	647,601	419,234	153,704	2,855,272	1,844,629	542,175
GRAND TOTAL		1,514,544	907,805	655,215	6,677,624	3,994,342	2,311,203

* R indicates capture by means of single rod and line.
N by means of nets, weirs etc.

APPENDIX No. 12

Quantity and Value of Sea Trout taken in 1981, 1982 and 1983 by Fisheries Regions

REGIONS	*	Quantity (kg)			Value (IR£)		
		1983	1982	1981	1983	1982	1981
Eastern							
Dundalk	R	1,056	770	136	3,491	2,625	570
District	N	559	245	–	1,848	836	–
Drogheda	R	798	314	136	2,638	1,070	570
District	N	1,480	200	63	4,892	682	266
Dublin	R	52	119	37	172	406	157
District	N	3,040	1,315	2,188	10,050	4,481	9,165
Wexford	R	427	322	269	1,411	1,098	1,129
District	N	849	369	383	2,807	1,258	1,602
TOTAL	R	2,333	1,525	578	7,712	5,199	2,426
	N	5,928	2,129	2,634	19,597	7,257	11,033
Southern							
Waterford	R	–	–	17	–	–	72
District	N	1,040	144	91	3,438	491	380
Lismore	R	–	–	27	–	–	112
District	N	704	182	580	2,327	621	2,432
TOTAL	R	–	–	44	–	–	184
	N	1,744	326	671	5,765	1,112	2,812
South Western							
Cork	R	81	2,994	2,722	268	10,209	11,403
District	N	203	772	649	671	2,633	2,720
Kerry	R	1,926	302	454	6,367	1,030	1,901
District	N	1,259	455	816	4,162	1,552	3,421
TOTAL	R	2,007	3,296	3,176	6,635	11,239	13,304
	N	1,462	1,227	1,465	4,833	4,185	6,141
Shannon							
Limerick	R	156	1	272	516	3	1,140
District	N	49	336	227	162	1,146	950
TOTAL	R	156	1	272	516	3	1,140
	N	49	336	227	162	1,146	950
Western							
Galway	R	23	36	–	76	123	–
District	N	–	168	73	–	573	304
Connemara	R	3,838	2,466	3,542	12,688	8,409	14,839
District	N	105	–	54	347	–	229
Ballinakill	R	1,082	1,007	612	3,577	3,434	2,566
District	N	–	647	109	–	2,206	456
TOTAL	R	4,943	3,509	4,154	16,341	11,966	17,405
	N	105	815	236	347	2,779	989
North Western							
Bangor	R	541	431	959	1,789	1,469	4,020
District	N	–	407	227	–	1,388	950
Ballina	R	96	48	160	317	163	671
District	N	–	4	227	–	14	950
Sligo	R	51	14	42	169	48	177
District	N	37	80	36	122	273	152
TOTAL	R	688	493	1,161	2,275	1,680	4,868
	N	37	491	490	122	1,675	2,052
Northern							
Ballyshannon	R	105	101	136	347	348	570
District	N	1,590	2,249	1,290	5,257	7,669	5,405
Letterkenny	R	645	416	1,021	2,132	1,418	4,276
District	N	247	292	680	817	996	2,851
TOTAL	R	750	517	1,157	2,479	1,766	4,846
	N	1,837	2,541	1,970	6,074	8,665	8,256
GRAND TOTAL		22,039	17,206	18,235	72,858	58,672	76,406

* R indicates capture by means of single rod and line
N by means of nets, weirs, etc.

APPENDIX No. 13

Quantity and Value of Eels taken in 1981, 1982 and 1983 by Fisheries Regions

REGIONS	Quantity (kg)			Value (IR£)		
	1983	1982	1981	1983	1982	1981
Eastern						
Dundalk District	908	908	151	1,198	1,998	217
Drogheda District	762	762	762	1,094	1,094	1,094
Dublin District	453	–	453	651	–	651
Wexford District	15,000	393	1,355	15,000	690	1,947
TOTAL	17,123	2,063	2,721	17,943	3,782	3,909
Southern						
Waterford District	4,839	4,839	1,437	9,491	9,491	2,028
Lismore District	694	769	185	694	846	261
TOTAL	5,533	5,608	1,622	10,185	10,337	2,289
South Western						
Kerry District	–	5	500	–	5	731
Cork District	–	136	–	–	100	–
TOTAL	–	141	500	–	105	731
Shannon						
Limerick District	61,570	79,625	46,413	194,438	173,958	99,232
TOTAL	61,570	79,625	46,413	194,438	173,958	99,232
Western						
Galway District	23,905	46,238	31,479	49,177	96,500	64,328
TOTAL	23,905	46,238	31,479	49,177	96,500	64,328
North Western						
Bangor District	308	586	620	600	1,289	922
Ballina District	5,391	5,799	3,612	8,640	12,757	7,607
Sligo District	540	–	136	1,200	–	286
TOTAL	6,239	6,385	4,368	10,440	14,046	8,815
Northern						
Ballyshannon District	2,476	5,280	7,020	3,460	5,029	7,523
TOTAL	2,476	5,280	7,020	3,460	5,029	7,523
GRAND TOTAL	116,846	145,340	94,123	285,643	303,757	186,827

The catch figures set out above are based on returns which are not completed. This explains any apparent inconsistency between the figures and the official export figures in any particular year.

APPENDIX No. 14

Total Quantity and Value of Salmon, Sea Trout and Eels taken by all Engines in 1981, 1982 and 1983 by Fisheries Regions

REGIONS	Total Quantity per Region (kg)			Total Value per Region (IR£)		
	1983	1982	1981	1983	1982	1981
Eastern						
Dundalk District	5,574	6,965	3,859	19,989	28,154	13,385
Drogheda District	20,519	12,957	11,579	85,689	73,929	39,386
Dublin District	4,010	1,679	4,489	12,923	15,421	16,361
Wexford District	23,538	6,929	10,135	51,236	33,302	33,350
TOTAL	53,641	28,530	30,062	169,837	150,806	102,482
Southern						
Waterford District	96,299	52,013	86,105	411,591	218,723	300,756
Lismore District	64,550	26,823	61,849	281,458	117,585	218,178
TOTAL	160,849	78,836	147,954	693,049	336,308	518,934
South Western						
Cork District	103,221	35,447	64,234	454,788	146,237	228,813
Kerry District	186,091	131,404	67,297	816,962	579,139	237,195
TOTAL	289,312	166,851	131,531	1,271,750	725,376	466,008
Shannon						
Limerick District	108,951	106,103	79,843	403,115	294,430	217,481
TOTAL	108,951	106,103	79,843	403,115	294,430	217,481
Western						
Galway District	97,475	68,195	69,033	373,522	194,119	196,842
Connemara District	23,653	12,845	12,366	99,936	58,173	46,002
Ballinakill District	12,090	10,828	10,662	52,111	48,311	38,088
TOTAL	133,218	91,868	92,061	525,569	300,603	280,932
North Western						
Bangor District	106,390	49,936	14,632	467,720	223,372	51,135
Ballina District	116,810	99,148	87,627	499,780	431,268	304,216
Sligo District	24,340	12,572	16,555	106,037	56,118	58,256
TOTAL	247,540	161,656	118,814	1,073,537	710,758	413,607
Northern						
Ballyshannon District	43,632	53,226	39,270	183,047	218,026	122,226
Letterkenny District	616,286	383,279	128,038	2,716,221	1,692,496	452,766
TOTAL	659,918	436,505	167,308	2,899,268	1,910,522	574,992
GRAND TOTAL	1,653,429	1,070,349	767,573	7,036,125	4,428,803	2,574,436

APPENDIX No. 15

Number, Quantity and Value of Salmon taken by Single Rod and Line in 1981, 1982 and 1983 by Fisheries Region

REGIONS	No. of Fish			Quantity (kg)			Value (IR£)		
	1983	1982	1981	1983	1982	1981	1983	1982	1981
Eastern									
Dundalk District	95	146	70	462	477	302	2,037	2,099	1,064
Drogheda District	284	362	322	1,392	1,182	1,491	6,137	5,201	5,259
Dublin District	103	66	151	455	216	684	2,006	950	2,411
Wexford District	680	124	20	3,084	405	95	13,597	1,782	336
TOTAL	1,162	698	563	5,393	2,280	2,572	23,777	10,032	9,070
Southern									
Waterford District	939	442	1,054	3,641	1,443	5,106	16,053	6,349	18,012
Lismore District	541	610	274	1,648	1,992	879	7,266	8,765	3,101
TOTAL	1,480	1,052	1,328	5,289	3,435	5,985	23,319	15,114	21,113
South Western									
Cork District	531	217	709	1,651	709	2,913	7,279	3,120	10,275
Kerry District	2,038	1,302	654	6,576	4,252	2,755	28,994	18,708	9,720
TOTAL	2,569	1,519	1,363	8,227	4,961	5,668	36,273	21,828	19,995
Shannon									
Limerick District	1,343	908	984	4,658	3,006	3,571	20,537	13,226	12,595
TOTAL	1,343	908	984	4,658	3,006	3,571	20,537	13,226	12,595
Western									
Galway District	482	479	861	1,939	1,564	3,256	8,549	6,881	11,486
Connemara District	424	469	126	1,635	1,532	486	7,209	6,741	1,714
Ballinakill District	490	603	100	1,832	1,970	449	8,077	8,668	1,582
TOTAL	1,396	1,551	1,087	5,406	5,066	4,191	23,835	22,290	14,782
North Western									
Bangor District	958	779	676	3,080	2,544	3,385	13,580	11,194	11,942
Ballina District	1,489	1,912	1,308	4,939	6,244	5,850	21,776	27,474	20,637
Sligo District	1,715	1,216	1,245	5,309	3,971	6,235	23,407	17,472	21,995
TOTAL	4,162	3,907	3,229	13,328	12,759	15,470	58,763	56,140	54,574
Northern									
Ballyshannon District	661	1,195	94	2,604	3,903	320	11,481	17,173	1,128
Letterkenny District	1,459	1,540	922	4,650	5,029	3,137	20,502	22,128	11,064
TOTAL	2,120	2,735	1,016	7,254	8,932	3,457	31,983	39,301	12,192
GRAND TOTAL	14,232	12,370	9,570	49,555	40,439	40,914	218,487	177,931	144,321

APPENDIX No. 16

Number, Quantity and Value of Sea Trout taken by Single Rod and Line in 1981, 1982 and 1983 by Fisheries Regions

REGIONS	No. of Fish			Quantity (kg)			Value (IR£)		
	1983	1982	1981	1983	1982	1981	1983	1982	1981
Eastern									
Dundalk District	2,060	1,424	400	1,056	770	136	3,491	2,625	570
Drogheda District	2,119	1,018	400	798	314	136	2,638	1,070	570
Dublin District	80	348	110	52	119	37	172	406	157
Wexford District	1,326	949	791	427	322	269	1,412	1,098	1,129
TOTAL	5,585	3,739	1,701	2,333	1,525	578	7,713	5,199	2,426
Southern									
Waterford District	–	–	50	–	–	17	–	–	72
Lismore District	–	–	78	–	–	27	–	–	112
TOTAL	–	–	128	–	–	44	–	–	184
South Western									
Cork District	237	4,400	8,000	81	2,994	2,722	268	10,209	11,403
Kerry District	2,849	459	1,000	1,926	302	454	6,367	1,030	1,901
TOTAL	3,086	4,859	9,000	2,007	3,296	3,176	6,635	11,239	13,304
Shannon									
Limerick District	529	2	800	156	1	272	516	3	1,140
TOTAL	529	2	800	156	1	272	516	3	1,140
Western									
Galway District	57	99	–	23	36	–	76	123	–
Connemara District	9,196	7,249	10,410	3,838	2,466	3,542	12,688	8,409	14,839
Ballinakill District	2,946	2,019	1,800	1,082	1,007	612	3,577	3,434	2,566
TOTAL	12,199	9,367	12,210	4,943	3,509	4,154	16,341	11,966	17,405
North Western									
Bangor District	1,095	1,080	2,819	541	431	959	1,789	1,469	4,020
Ballina District	250	137	470	96	48	160	317	163	671
Sligo District	138	39	123	51	14	42	169	48	177
TOTAL	1,483	1,256	3,412	688	493	1,161	2,275	1,680	4,868
Northern									
Ballyshannon District	243	249	400	105	101	136	347	348	570
Letterkenny District	2,032	1,019	3,000	645	416	1,021	2,132	1,418	4,276
TOTAL	2,275	1,268	3,400	750	517	1,157	2,479	1,766	4,846
GRAND TOTAL	25,157	20,491	30,651	10,877	9,341	10,542	35,959	31,853	44,173

APPENDIX No. 17

Particulars of Receipts and Expenditure by the Central and Regional Fisheries Boards for year ended 31 December, 1983

Fisheries Board	Opening Balance IR£	RECEIPTS (IR£)						EXPENDITURE (IR£)				Total Expend- IR£	Closing Balance IR£
		Licence Duty IR£	Fishery Rates IR£	Sale of Fish IR£	Exchequer Grant IR£	Misc. Receipts IR£	Total Receipts IR£	Salaries & Wages IR£	Travelling & Subsistence IR£	Purchase of Vehicles Boats & Equipment IR£	Misc. Expend- IR£		
Central	+1,701	41,894	–	132,331	1,845,000	269,349	2,288,574	1,442,920	90,635	244,973	520,452	2,298,980	−8,705
Eastern	+12,294	51,957	9,508	583	410,000	14,029	486,077	251,573	71,675	47,301	105,098	475,647	+22,724
Southern	+23,823	45,593	20,677	981	492,000	30,035	589,286	324,369	48,853	68,817	115,185	557,224	+55,885
South-Western	–	42,298	12,506	3,800	438,000	28,615	525,219	319,116	37,858	40,862	108,701	506,537	+18,682
Shannon	+25,091	33,403	14,343	682	280,000	15,586	344,014	171,928	18,083	37,366	90,485	317,862	+54,243
Western	−24,106	27,453	33,527	473	347,000	3,538	411,991	210,882	47,901	37,556	95,090	391,429	−3,544
North-Western	−4,359	45,507	47,607	4,011	348,000	14,688	459,813	263,526	21,518	48,333	124,208	457,585	−2,131
Northern	+7,000	54,464	15,152	4,476	424,000	23,594	521,686	299,321	28,348	47,996	143,856	519,521	+9,165

APPENDIX No. 18

Particulars of Licences Issued by Regional Boards for Year 1983

	A	O	R	B	P	S	T			D	C	U	E	F	G	H	I	J	N	K	L	M	V
	Annual Valid All Districts	Late Season All Districts	Seven Day All Districts	Annual District of Issue Only	Late Season District of Issue Only	Foyle Valid All Districts	Foyle District of Issue Only	Special Local Licences (Tidal Waters)		Drift Net	Draft Net	Pole Net	Bag Net	Stake Net	Head Weir	Box or Crib	Loop Net	Snap Net	Oyster Dredge	Gap Eye Basket or Coghill	Long Line for Eels	Eel Trap	Fyke Net
	IR£ 15	IR£ 10	IR£ 5	IR£ 7	IR£ 5	IR£ 10	IR£ 4	Rod	Net	IR£ 115	IR£ 65	IR£ 10	IR£ 65	IR£ 115	IR£ 22	IR£ 44	IR£ 4.50	IR£ 26.50	IR£ 30	IR£ 30	IR£ 30	IR£ 50	–
Eastern	1,060	149	31	891	754	–	–	–	–	13	160	–	–	–	–	6	–	–	–	9	5	3	21
Southern	262	19	235	1,566	58	–	–	–	–	208	11	–	1	2	1	1	–	130	–	11	0	0	8
South Western	371	38	263	1,059	231	–	–	–	–	110	83	–	1	–	–	1	–	–	36	–	–	2	3
Shannon	244	28	22	1,284	117	–	–	–	–	81	107	–	–	–	–	–	–	–	–	97	4	–	4
Western	147	105	356	223	363	–	–	–	–	88	17	–	–	–	–	5	–	–	141	35	3	2	–
North Western	296	38	515	1,628	491	0	0	0	25	116	19	–	1	–	–	7	–	–	200	28	8	2	–
Northern	260	24	377	1,403	611	11	66	465	24	185	129	–	–	–	–	2	32	–	3	8	16	2	–
Total	2,640	401	1,799	8,054	2,625	11	66	465	49	801	526	–	3	2	1	22	32	130	380	188	36	11	36

APPENDIX No. 19

Licence Duties Payable on Fishing Engines

		IR£
On each	Salmon Rod – Annual (valid all districts)	15.00
do.	Salmon Rod – Late Season (valid all districts)	10.00
do.	Salmon Rod – Seven day (valid all districts)	5.00
do.	Salmon Rod – Annual (valid district of issue only)	7.00
do.	Salmon Rod – Late Season (valid district of issue only)	5.00
do.	Salmon Rod – Foyle area extension (valid all districts)	10.00
do.	Salmon Rod – Foyle area extension (valid district of issue only)	4.00
On each	Drift Net	115.00
do.	Draft Net	65.00
do.	Snap Net	26.00
do.	Bag Net	65.50
do.	Stake Net	115.00
do.	Head Weir	22.00
do.	Box or Crib	44.00
do.	Pole Net	10.00
do.	Loop Net	4.50
do.	Gap, Eye, Basket or Coghill Net for Eels	30.00
do.	Longline for Eels	30.00
do.	Eel trap as used in Drogheda and Ballyshannon Districts	50.00
do.	Oyster Fishing Engines	30.00
do.	Fyke Net for train of 20 or less plus £1.50 for each net thereafter	30.00
Special Local Licences		
Rod		7.00
Draft Net		88.00

Special Local Rod Licences may be reduced by £IR5.50 for holders of annual (ordinary) or annual (district) licences.

APPENDIX No. 20

Abstract of Statutory Instruments made in 1983

Sea Fisheries

(i) Herring (Restriction of Fishing in the North Irish Sea) Order, 1983 (S.I. No. 18 of 1983) dated 18th January, 1983, continues the ban on herring fishing in that part of the Irish Sea which lies north of the parallel of 53°N and within 12 miles from the baseline. It also makes an exemption from the ban for vessels of 40 feet and under in registered length using only drift nets with meshes of not less than 54 millimetres diagonal measurement.

(ii) Fishery Harbour Centre (Killybegs) (Amendment) Order, 1983 (S.I. No. 19 of 1983) dated 18th January, 1983, extends the limits of the Killybegs Fishery Harbour Centre.

(iii) Control of Fishing for Mackerel Order, 1983 (S.I. No. 97 of 1983) dated 8th April, 1983 prohibited fishing for mackerel by vessels exceeding 55 feet in registered length except under licence issued by the Minister for Fisheries and Forestry.

(iv) Demersal Fish (Handling, Storage and Transport) Regulations, 1967 (Amendment) Regulations, 1983 (S.I. No. 117 of 1983) dated 4th May, 1983 amends the Demersal Fish (Handling, Storage and Transport) Regulations, 1967 as regards the powers of enforcement of Authorised Officers.

(v) Licensing of Sea-Fishing Boats (Exemption) Regulations, 1983 (S.I. No. 245 of 1983) dated 17th August, 1983 exempts Irish sea-fishing boats of 65 feet and under in the defined length from the provisions of subsection (2) of section 222B of the Fisheries (Consolidation) Act, 1959 which requires that sea-fishing boats shall not fish except under licence issued by the Minister for Fisheries and Forestry.

(vi) Sea-Fishing Boats Regulations, 1983 (S.I. No. 246 of 1983) dated 17th August, 1983, requires that a sea-fishing boat registered in Northern Ireland, Great Britain, the Channel Islands or the Isle of Man may not be used to fish within the exclusive fishery limits of the State, land fish in the State or trans-ship fish, in port or otherwise, within such limits unless the crew consists of at least 75 per cent of Irish citizens or nationals of another Member State of the E.E.C.

(vii) Fisheries Act, 1980 (Section 54) (Commencement) Order, 1983 (S.I. No. 261 of 1983) dated 31st August, 1983 brings Section 54 of the Fisheries Act, 1980 (No. 1 of 1980) into effect from 31st August, 1983.

Section 54 provides for a revised system of licensing and control for existing and proposed fish farming operations. One of the main provisions of the Section is that any person or body corporate engaging in fish farming may do so only in accordance with a fish culture licence, an oyster bed licence, an oyster fishery order or a licence granted by the Minister under Section 54. The Minister may also designate areas where fish farming may be carried out in accordance with such licences and hold public enquiries for this purpose.

(viii) Celtic Sea Herring Fishing (Licensing) Order, 1983 (S.I. No. 280 of

1983) dated 30th September, 1983 prohibits fishing for herring in the specified area by Irish sea-fishing boats except under licence issued by the Minister for Fisheries and Forestry.

(ix) Herring (Restriction of Fishing in the Celtic Sea) Order, 1983 (S.I. No. 281 of 1983) dated 30th September, 1983 provided for herring fishing to take place in the specified area in the period 1 October 1983 to 31 March 1984 by vessels registered in Ireland, France, West Germany, Netherlands and the United Kingdom as agreed by E.E.C. Council of Fisheries Ministers on 25 January, 1983.

Oyster Fishery Orders, 1983

(i) Oyster Fishery (Cork Harbour) (No. 2) Order, 1981 (Determination) Order, 1983 dated 14th October, 1983 determined the Oyster Fishery (Cork Harbour) (No. 2) Order, 1981 granted to Cork Seafoods Ltd., Parkgarriff, Monkstown, Co. Cork on 17 April, 1981.

Inland Fisheries

1. Special Tidal Waters (Special Local Licences) Order, 1983 (S.I. No. 41 of 1983) dated 17 February, 1983, prescribes the special local licence duties payable in respect of fishing engines used in special tidal waters.

2. Fisheries Act, 1980 (Section 26) Regulations, 1983 (S.I. No. 71 of 1983) dated 9 March, 1983, prescribe the instrument of appointment by the Central Fisheries Board or a Regional Fisheries Board of an officer or other person to be an authorised person for the purposes of Part XVIII of the Fisheries (Consolidation) Act, 1959.

3. Northern Fisheries Region (River Erne) Bye-law No. 631, 1983, dated 23 March, 1983, prohibits fishing for salmon or trout with any fishing engine other than rod and line in the tidal waters of the River Erne, or its tributary, the Abbey River during the periods –

   (a) from the commencement date of the Bye-law (23 March, 1983) to 6 a.m. on 11 June, 1983,
   (b) from 6 a.m. on 11 July, 1983 to 6 a.m. on 25 July, 1983.

4. North Western Fisheries Region (River Owenmore) Bye-law No. 632, 1983, dated 29 March, 1983, extends the prohibition on all commercial fishing for salmon in a specified portion of the tidal waters of the river Owenmore contained in the Bangor district Bye-law No. 611, 1980. Under this bye-law commercial fishing for salmon is prohibited in the tidal waters of the river Owenmore upstream of a straight line drawn from the blue and white marker at the high water mark of the townland of Aughness to the yellow and white marker at the high-water mark of the townland of Tristia as far as the tidal and freshwater boundary of the river Owenmore which is situated at the disused salmon weir between the townlands of Goolamore and Ballina. The private fishery situated within that portion of the river is included in the prohibition.

5. Foyle Fisheries (Amendment) Act, 1983 (Commencement) Order, 1983 (S.I. No. 116 of 1983) dated 3 May, 1983, brings the Foyle Fisheries (Amendment) Act, 1983 into operation on 16 May, 1983. The Act provides for increases in penalties for fishery offences in the Foyle Area.

6. Shannon Fisheries Region (River Inagh) Bye-law No. 633, 1983, dated 6 May, 1983, prohibits all fishing in the part of the Inagh

River specified in the Bye-law i.e. from the area known as the Head of the Deep (approx. 145 metres from the downstream entrance of the fish pass in the Ennistimon Falls) to the Forge located 44 metres above the upstream face of the Ennistimon Road Bridge.

7. Southern Fisheries Region (Waterford District) Bye-law No. C.S. 125, 1983, dated 14 July, 1983, alters the salmon angling close season in the rivers Suir, Nore and Barrow from the period commencing on 1st September in each year and ending on 31st January the following year to the period commencing 1st October on each year and ending on 31st January the following year.

8. River Erne (Special Local Licences) (Amendment) Order, 1983 (S.I. No. 219 of 1983), dated 26 July, 1983, provides that the special local licence duty payable in respect of a draft net for use in the tidal waters of the River Erne shall be IR£65.

9. Shannon Fisheries Region (River Cashen) Bye-law No. 634, 1983, dated 29 July, 1983, permits fishermen in that part of the River Cashen between the boundary line one half mile upstream from the defined mouth of the river and a line drawn across the river from Terence O'Connor's Point to spread their nets across their boats in the manner specified in the Bye-law during the period from 7 a.m. on Saturday to 5 a.m. on the next following Monday.

Foyle Area

1. Foyle Area (Licensing of Fishing Engines) (Amendment) Regulations, 1983, dated 15 February, 1983, increase the licence fees payable in respect of each type of net used and game fishing licence issued in the Foyle Area.

2. Foyle Area (Control of Netting) (Temporary Provisions) Regulations, 1983, dated 5 May, 1983, provide for a temporary amendment of the Foyle Area (Control of Netting) Regulations, 1981, which control and restrict both draft and drift netting for salmon in the Foyle Area.

   They provide that, for the duration of the 1983 drift net fishing season, fishing by drift net is prohibited during the period between 1700 hours (5 p.m.) on any day and 0700 hours (7 a.m.) on the following day instead of during the period between 0500 hours (5 a.m.) and 1700 hours (5 p.m.) on any day.

3. Foyle Area (Control of Netting) (Amendment) Regulations, 1983, dated 7 June, 1983, amend the Foyle Area (Control of Netting) Regulations, 1981, which control and restrict netting for salmon or trout in the Foyle Area.

   They prohibit the netting of fish, other than with a landing net used solely as an auxiliary to lawful angling with rod and line, in the tidal waters of the River Roe except by the owner of a several fishery.

   With effect from 1 June, 1984, the Regulations also restrict to 30 meshes the depth of netting which may be used for drift net fishing and with effect from the same date introduce a restriction on the size of boats which may be used for the purpose of netting for salmon or trout in the Foyle Area. Provision is made for the continued use of existing boats which exceed the specified maximum length of 12.2 metres while they remain the property of the current licence holder.

With effect from 1 June, 1985 the Regulations further restrict the materials which may be used in the construction of commercial fishing nets for the capture of salmon or trout. The effect of this further restriction will be that 2 types of net in common use will from 1 June, 1985, be banned, namely a multi-strand monofilament and single throw monoply which is also known as super nylon or Japanese netting. This is in addition to the existing ban on the use of monofilament netting.

4. Foyle Area (Definition of the Mouth of the River Roe) Regulations, 1983, dated 8 July, 1983, re-define the mouth of the River Roe. Under the Foyle Fisheries Acts it is an offence:

(a) for any person (other than the owner of a several fishery) to shoot, draw or use any net for taking salmon at the mouth of any river or within half a mile seaward or half a mile inwards or along the coast from the mouth of any river;

and

(b) for any person to shoot, draw or stretch any net entirely across the mouth of a river.

5. Foyle Area (Angling) Regulations, 1983, dated 14 October, 1983, which replace the Foyle Area (Angling) Regulations, 1977, specify the methods of angling which are permitted in certain waters and provide for a minimum length and number of fish which may be retained on any one day. They also specify certain stretches of river where angling is prohibited and restrict the use of boats for angling on certain waters.

The Regulations largely repeat the provisions of the 1977 Regulations but make the following changes of substance:

(i) "spinning" has been redefined to exclude the use as bait of earthworms and maggots (Regulation 2);

(ii) angling at Binevenagh Dam, County Londonderry, is no longer regulated;

and

(iii) angling is now prohibited for 64 metres downstream of the weir known as Sion Mills Weir in the townlands of Camus and Liggartown, County Tyrone, except that angling may take place from the right or eastern bank (Regulation 4(1) and Schedule 2).

APPENDIX No. 21

Particulars of Public Inquiries held during 1983

Date of Inquiry	Where Held	Subject Matter	Decision on Report of Inquiry
26 April, 1983	Enniscorthy, Co. Wexford	Proposal to prohibit the use of draft nets on that portion of the River Slaney known as "The Gut".	It was decided not to proceed with the making of a Bye-law.

APPENDIX No. 22 (Contd)

Output and Disposal of Fish Hatchery Produce 1982/3

Hatchery	Output Ova			Disposal	Rivers Systems stocked
	Salmon (000)	Sea Trout (000)	Brown Trout (000)	(000)	
Glenties	22			22 Ova	Owenea system
Feale	72			71 Ova	River Feale system
Inistioge	270			100 Ova	Suir
				120 "	Nore
				50 "	Barrow
Mallow	333			295 Ova	Blackwater
Salmon Research Trust	416	24		20 Ova	Galway Aquatics Enterprises Ltd.
				60 "	Northern Regional Fisheries Board
				90 "	North Western Fisheries Board
				60 "	Southern Regional " "
				72 "	Shannon Regional " "
				42 "	Eastern " " "
				17 "	Glenisland Co-Op Beltra Lake
				60 "	Retained
				4 Sea Trout smolts	Retained
				1 " " "	Burrishoole
Virginia	98			60 Fingerlings	Retained
				20 Smolts	Boyne
				12 Parr	Blackwater
				6 Parr	Stoneyford
Parteen	625			291 Fingerlings	Suck, Inny, L/Brosna, B/Brosna, Kilcow, Nenagh, Killimor, Silver, Clodiagh, Mulcair.
				98 Pre-smolts	Shannon system
				120 Smolts	" "
			204	204 Trout ova	Shannon System
				34 Fingerlings trout	–
				9 Trout 1+	–
				2 Trout 2+	–
Carrigadrohid	710			710 Ova	Retained
				135 Smolts	Lee
Cong	244			20 Ova	Galway Canal
				10 "	Corrib
				15 "	Cong
				20 "	Connemara District
				20 "	Ballinakill "
				5 "	Inagh/Derryclara
				5 "	Costello/Fermoyle
				5 "	Ballinahinch/Invermore
				90 "	Retained

Contd.

APPENDIX No. 22

Output and Disposal of Fish Hatchery Produce 1982/3

				6 Smolts 2+	Corrib
				18 Smolts 1+	Corrib
				20 Smolts 1+	Cong R.
				4 " "	Connemara District
				4 " "	Ballinakill District
				26 Parr	Ballinakill District
				26 "	Connemara "
				18 "	Grange/Albert Rivers
				9 "	Cormona
				8 "	Owenriff R. Oughterard
				6 "	Crumlin R.
Carrowmore Lake Incubating Unit	24			24 Ova	Altnabrocky R.
Fanure (Roscrea)			480	3 Fry	Various Central Board waters in Cos. Cavan, Westmeath, Longford, Roscommon and Angling Interests.
				48 Fingerlings	
				33 Two year olds	
Cullion (Mullingar)			1,704	642 Fry	Various Central Board waters in Cos. Cavan, Longford, Roscommon and Mayo and Angling Interests.
				20 Fingerlings	
				42 Spring yearlings	
				30 Two year olds	
Erne	40			40 unfed fry	Erne system
				170 eyed ova	Retained

APPENDIX No. 23

Scientific and Other Papers

DEPARTMENTAL

A. IRISH FISHERIES INVESTIGATIONS

Series B (Marine)	
26. G. Wilson.	The Littoral Fauna of Dublin Bay.

B. FISHERY LEAFLET

119. J. Doyle.	Trout Farming in Freshwater
121. E. Fahy.	The Sea Trout Year 1982
122. E. Fahy.	Have Hatcheries a Role in Sea-Trout Management.

C. FISHERIES BULLETIN

7. C. Moriarty.	A Population Study of the eel *Anguilla anguilla* in Meelick Bay, Lough Derg.

OTHER PUBLICATIONS

E. Fahy.	Feeding ecology of Feral rainbow trout *Salmo gairdneri* Richardson in Mulroy Bay an Atlantic sea lough. Irish Naturalists' Journal 21, pp 103-107.
P. Gallagher.	The mortality of hatchery reared Atlantic salmon *Salmo salar* stocked in four Boyne tributaries. M.Sc. Thesis, Trinity College Dublin, 115pp.
R.J.R. Grainger.	Managing the recovery of the Celtic Sea and Division VII J. herring stock. ICES CM 1983. H: 30.
R.J.R. Grainger, E. Barnwall and A. Cullen	Herring larval surveys in the Celtic Sea and Division VII J in 1982/83 ICES CM 1983 H:31.
J.P. Hillis	Experiment with a double cod – end *Nephrops* trawl. ICES VM 1983. B:29.
E. McArdle.	Fecundities of winter spawning herring off the Northwest coast of Ireland. ICES CM 1983. H:59.
J. Molloy.	The occurrence of winter and spring spawning herring off the north-west coast of Ireland. ICES CM 1983. H:60.
C. Moriarty.	Age determination and growth rate of eels *Anguilla Anguilla* (L). Journal of Fish Biology 23, pp. 257-264.
C. Moriarty.	The African pike *Hepsetus odoe* Nigerian Field 47, pp 212-221.
M. Parker, F.P. Thurberg and V. Dethlefsen.	Biological effects monitoring – implementation of a programme. ICES CM 1983. E:25.